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ABSTRACT

The accomplishments of the Kentucky Allied Health Project, which implemented a model articulated system of allied health education, are described. The system included plans to promote transition from one education level to another and articulation in educational planning and resource utilization. The project has greatly increased interinstitutional cooperation and coordination among the 105 allied health programs in Kentucky, 72 of which are offered in the public sector. After an overview of the project, four models for transfer of credit and the opportunity for career mobility are described: preprofessional curriculum, basic professional curriculum, certificate granting basic professional curriculum, and intermediate professional curriculum. An overview of the following allied health disciplines, including educational requirements and transfer agreements, is presented: clinical laboratory sciences education, dental auxiliary education, dietetics/nutrition education, radiological sciences education, rehabilitation therapy education, and respiratory therapy education. Summaries are also presented of allied health manpower studies that were undertaken. Lastly, a summary table is appended of approximately 30 transfer agreements that have been negotiated. (SW)

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A STATE SYSTEM FOR ALLIED HEALTH EDUCATION

KENTUCKY ALLIED HEALTH PROJECT

Kentucky Council on Higher Education
Frankfort, Kentucky

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Respiratory Therapy
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Community College System

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Community College
Kentucky State University

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Program Director
Radiologic Technology

Dr. Ted Pass, II
Pre-Medical Technology Advisor
Morehead State University

Ms. Sandra Sayers
Coordinated Undergraduate Program
University of Kentucky

Ms. Barbara J. Schnurr
Director, Program in Dental Hygiene
University of Louisville

*Task Force members during the first year of the KAHP.
**At the end of the KAHP grant period (i.e., June, 1982) representatives for the discipline advisory groups were added to the task force.

KENTUCKY ALLIED HEALTH PROJECT

FINAL REPORT

Commonwealth of Kentucky
Council on Higher Education
Frankfort, Kentucky 40601

Harry M. Snyder
Executive Director

September, 1982

TABLE OF CONTENTS

	Page
FORWARD	iv
PREFACE	v
ACKNOWLEDGEMENTS	vi
SUMMARY	viii
1 - PROJECT OVERVIEW	1
Setting of Project	1
Purpose of Project	2
Significance	2
Organization of KAHP	4
Approach to Leadership	8
2 - ALLIED HEALTH EDUCATION	13
Mobility and Articulation	14
3 - STATUS AND ACCOMPLISHMENTS OF EACH ADVISORY GROUP	
Clinical Laboratory Sciences Education	21
Dental Auxiliary Education	31
Dietetics/Nutrition Education	37
Radiological Sciences Education	45
Rehabilitation Therapy Education	53
Respiratory Therapy Education	63
4 - ALLIED HEALTH MANPOWER STUDIES	67
5 - PROJECT SUMMARY	77
APPENDIX A - Summary of Transfer Agreements	81
APPENDIX B - Discipline Advisory Group Members	85

ILLUSTRATIONS

Figures		Page
Figure 1.0	Organizational Structure of the Kentucky Allied Health Project	6
Figure 2.1	Transfer Model A: Pre-Professional Curriculum	15
Figure 2.2	Transfer Model B: Associate Degree Basic Curriculum	16
Figure 2.3	Transfer Model C: Certificate Basic Curriculum	17
Figure 2.4	Transfer Model D: Intermediate Professional Curriculum	18
Figure 3.1	Clinical Laboratory Sciences Articulation Model	23
Figure 3.2	Dental Auxiliary Articulated Curriculum Model	34
Figure 3.3	Dental Auxiliary Articulation Model	35
Figure 3.4	Nutrition/Dietetics Articulation Model	41
Figure 3.5	Radiological Sciences Articulation Model	48
Figure 3.6	Radiological Sciences Articulation Matrix	49
Figure 3.7	Respiratory Therapy Articulation Model	65

Tables		
Table 1.0	Phases of the Kentucky Allied Health Project	4
Table 3.1	Model Articulated Curriculum for Clinical Laboratory Sciences	25
Table 3.2	Total Credit Transferring for MLT Courses at State Universities	28
Table 3.3	Kentucky Undergraduate Dietetics Programs: Basic Curriculum Core	42
Table 4.0	Comparison of Requirements and Resources Projections for Kentucky Physical Therapists	69

FOREWORD

The Kentucky Allied Health Project (KAHP) is an outstanding example of the benefits to be derived from a spirit of multi-institutional, multiorganizational and multi-agency cooperation and collaboration. I am most proud of the fact that the Kentucky Council on Higher Education has been intimately involved with this project. The KAHP represents literally thousands of hours of work contributed by many individuals. I am grateful to all those who contributed so much to the success of this endeavor. The people of Kentucky--indeed people concerned about allied health education throughout the nation--are the ultimate beneficiaries of this work. I believe that the Council and its staff proved to be an effective catalyst for KAHP. Yet, the true test of this project's value rests in the adoption and utilization of its report by educational planners and providers. While it is not envisioned that this report will be widely quoted--although it most certainly will be quoted in the professional literature--it is our hope that many copies, dog-eared from frequent use, will be found in institutional libraries and in the personal libraries of faculties, staffs and administrators.

As the report states "[project] leadership was shared with all members of the group." Now is the time for that leadership to become focused on implementation and evaluation.

It is most fitting that Dr. Joy M. Kirchner, Associate Director of Academic Affairs, Division of Allied Health, University of Louisville, is the author of the Preface. It was during her tenure as staff at the Council on Higher Education that Dr. Kirchner set the framework for much of the good development with which allied health education in Kentucky has undergone.

Harry M. Snyder
Executive Director

PREFACE

It is with respect and admiration that I view the achievements on the present project. Obviously, the strong support of Harry M. Snyder, Executive Director of the Council and the leadership provided by Dr. Elizabeth King, Dr. Gary Breegle, Mr. Fred Geiger, Ms. Kathleen Carroll, Ms. Joanne Lang, and Ms. Frances Morris has been outstanding. In addition, the sharing of expertise and other resources among the educational institutions has been remarkable. It is gratifying for those who earlier laid the foundation for this project to assess the progress that has been made toward development of a unique statewide system of allied health education.

The present project is founded on a study of allied health education conducted in 1973-75. This study delineated the need for the project, developed the educational support for and created methodologies for reaching concensus in groups with disparate interests. In Part Two: Allied Health, Kentucky and Health Sciences Education there is a description of the study which was conducted in conjunction with other studies in dentistry, medicine, nursing, optometry, pharmacy and podiatry. This study assessed the issues and problems in allied health and made recommendations for alleviation of them. In 1974 it became evident that allied health educational programs were being developed in an unorganized, nonsystematic manner based on extremely limited and often misleading data. The resulting uncoordinated, "dead end" levels of programs within a discipline were frequently duplicative and unnecessarily costly to students and the state. With the evidence in hand, a grant was written to provide for the development of an articulated system of allied health education in Kentucky, assuring the participation and agreement of faculty in programs to be affected. Subsequent funding from the Department of Health, Education and Welfare was secured in the summer of 1978.

Contributions to the foundation study are indicated in the Report stipulated above, and are too numerous to be listed here. However, special appreciation in the early planning for this project must be expressed to Dr. A. D. Albright and to Dr. Harry Bohannan who during their tenure at the Council on Higher Education had the vision to set into motion the processes that culminated with the successful completion of this project. In addition, special appreciation is expressed to Dr. Ted Morford, Dr. Angie (E.L.) Hebbeler, Dr. Joseph Hamburg, and Dr. Charles T. Wethington, Jr. who also contributed to the early planning for the project. It is obvious that Kentucky leadership in allied health education is shared among a large number of educators and practitioners who have assisted in promoting career mobility (through academic mobility) in a successful effort that can assist other states in ameliorating similar problems.

Joy M. Kirchner, Associate Director
for Academic Affairs
Division of Allied Health
University of Louisville

ACKNOWLEDGEMENTS

While many individuals have contributed to the accomplishments of the Kentucky Allied Health Project, special thanks and recognition go to Joy M. Kirchner, and Joseph Hamburg, Dean, Allied Health Professions, University of Kentucky. Dr. Kirchner wrote the initial grant application while she was the Associate Director for Allied Health Education at the Council on Higher Education with the encouragement of Dr. Hamburg. Together their pragmatic but visionary planning laid the foundation for a statewide system of allied health education. We thank them.

A special word of thanks goes to Council staff members who helped make our work successful. We appreciate the support that the Executive Director, Harry M. Snyder gave to the project. The support given by Robert L. Barnett, Director of Policy Studies during the first two years of the project was invaluable. He guided the recruitment and hiring of project staff, oriented new staff, and assisted in providing information regarding policies and procedures that were essential to the initial planning of the project and its success. In addition, E. L. (Angie) Hebbeler, Director for Health Programs and Roy P. Peterson, Deputy Executive Director for Academic Affairs gave freely of their expertise and time. For the first two years of the project Gary G. Breegle was assistant project director. His guidance in planning, evaluation and research brought inestimable value to our efforts.

The Council's computer science staff also provided essential assistance. We appreciate the support of Michael R. Bailey, Linda P. Eldridge, Angela Mahoney and J. Kenneth Walker.

The reports could not have been prepared without the help of the Council's secretarial staff. In particular we are grateful to Darlene Blade, Teresa K. Kinne, and Ruth A. Taulbee for their patience and hardwork during the preparation of the reports. We also appreciate the secretarial assistance of Elaine F. Fultz, Diana Mangeot, Brenda Sageser, Shari Sullivan, Sandy K. Thurmond, Charlotte Vance and Sandy Waits. We also thank Joseph Burgess, the Council's Coordinator of Public Information, for assistance with publishing this report.

We asked many others for their advice and counsel, and wish to recognize them for their contribution. They include the following: Wanda D. Bigham, Morehead State University; Ann S. Bisconti, American Society of Allied Health Professions; Keith D. Blayney, University of Alabama; Ralph Boatman, University of North Carolina; Frank G. Dickey, Chairman, National Commission on Allied Health Education; Marie C. Dietrich, New Jersey School of Allied Health Professions; Carley Dodd, Western Kentucky University; Richard J. Dowling, American Society of Allied Health Professions; Eleanor Gilpatrick, Hunter College; Robert Hutson, Quinnipiac College; Frank Kirk, International Technologies; Robert E. Kinsinger, W. K. Kellogg Foundation; William Knisely, Medical University of South Carolina; Craig Scanlan, Brookdale Community College; Dan Southern, Western Carolina University; Sharon Sweeting, Jackson Memorial Hospital; C. Kenneth Tanner, University of Tennessee; Robert Tomlinson, University of Illinois; and Irene Woodall, Bala-Cynwyd, Pennsylvania.

Many special individuals contributed to the completion of the allied health manpower studies. Charles Kendell, Director of the Kentucky's Health and Vital Statistics Office and members of his staff (i.e., Ann C. Cailteux, Jerry Staley, Linda L. Williamson and Jack Rodman) gave freely of their time and expertise and shared data willingly.

In addition, William Davenhall, Vice President, Kentucky Hospital Association and members of his staff (i.e., Stephanie Sapp and Nancy Lipinski) worked closely with the Council on Higher Education's staff to complete the respiratory therapy, clinical laboratory sciences and radiological sciences surveys.

Ms. Nancy Brinly from the Kentucky Physical Therapy Association contributed to the physical therapy manpower study. Donald R. Hughes from the Radiation Control Branch of the Department for Human Resources helped with the radiological sciences manpower survey.

The educators, clinicians, and administrators who contributed to the Kentucky Allied Health Project would like to thank Charles Munn and the U. S. Department of Health and Human Services, Bureau of Health Professions for their financial support.

Finally, the project staff would like to especially thank the Allied Health Task Force and the Discipline Advisory group members for their contributions and long hours of hard work.

Kentucky Allied Health Project Staff

Gary G. Breegle
Kathleen A. Carroll
Frederick R. Geiger
Elizabeth C. King
M. Joanne Lang
Frances J. Morris

The purpose of the Kentucky Allied Health Project is to use the resources available to develop and implement a model articulated system of allied health education. The articulated system is viewed in the broadest sense to include articulation in learning (i.e., plans to permit a smooth transition from one education level to another) and articulation in educational planning and resource utilization. There are currently 105 allied health programs in Kentucky, seventy-two (72) of these programs are offered by the public sector. Allied health activities have significantly increased the interinstitutional cooperation and coordination among these programs.

The Kentucky Allied Health Project is the first effort in the nation to design a statewide system for allied health education which coordinates all levels of allied health programs in all types of educational institutions. Approximately 100 faculty, clinicians and administrators from clinical laboratory sciences, dental auxiliaries, nutrition/dietetics, radiological sciences, rehabilitation therapies and respiratory therapy have worked to design models that will permit a smooth transition from one educational level to another with minimum loss of time and academic credit.

ACCOMPLISHMENTS

1. Negotiation of Transfer Agreements. Approximately 30 transfer agreements have been negotiated. (See Appendix A.) These transfer agreements will offer increased career mobility for allied health students in the Commonwealth.

2. Development of Manpower Models. Successful interagency collaboration between the Council on Higher Education, the Department for Human Resources, and the Kentucky Hospital Association for statewide allied health program planning has resulted in the completion of a physical therapy manpower projection model and a respiratory therapy manpower study. The data from the studies provided Council staff with important, current manpower data for completing the staff review for new program proposals. Currently, manpower projection models are being developed for the clinical laboratory sciences, dental hygiene and radiological sciences. In addition to the interagency collaboration for the development of these models, there has also been substantial support from several state professional societies.

   The results from the manpower studies will provide essential data for new program and existing program review. These data have not been available as an input for Council decisions.

   Development of Model and Core Curricula. The dental auxiliaries advisory group has designed a core curriculum and identified common courses for two or more auxiliaries. The radiological sciences and the clinical laboratory sciences advisory groups have developed curriculum guides. Finally, the respiratory therapy and nutrition/dietetics advisory groups have adapted the Health Services Mobility Study to develop model curricula.

4. Design for Graduate Follow-up. The components of a system for graduate follow-up have been developed and implemented by the nutrition/dietetics advisory group to serve as a model for assessing the success of graduates from allied health educational programs.

5. Pilot Transfer Evaluation Design has been Developed and Tested. An evaluation design to measure movement of students from one program to another (i.e., success of transfer) has been designed and successfully pilot tested on the movement of medical technology students.

6. Publications. An allied health program inventory has been completed. Final discipline and technical advisory group reports, including system design, implementation methods, evaluation, and recommendations, have been written. Also, student brochures for each discipline have been disseminated describing educational and career mobility opportunities. In addition, three issues of KAHP NEWS have been written and disseminated nationally.

7. Delphi Probe Conducted to Forecast the Future of Health Care Delivery for the Year 2000. A Delphi probe of health care delivery over the next 20 years was conducted. The purpose of the probe was to provide an advanced look at the probable future of health care delivery. A national panel of respondents reacted to approximately 100 "future" statements. The results were summarized and formed into a scenario. Results suggest no major changes in health care delivery until 1990.

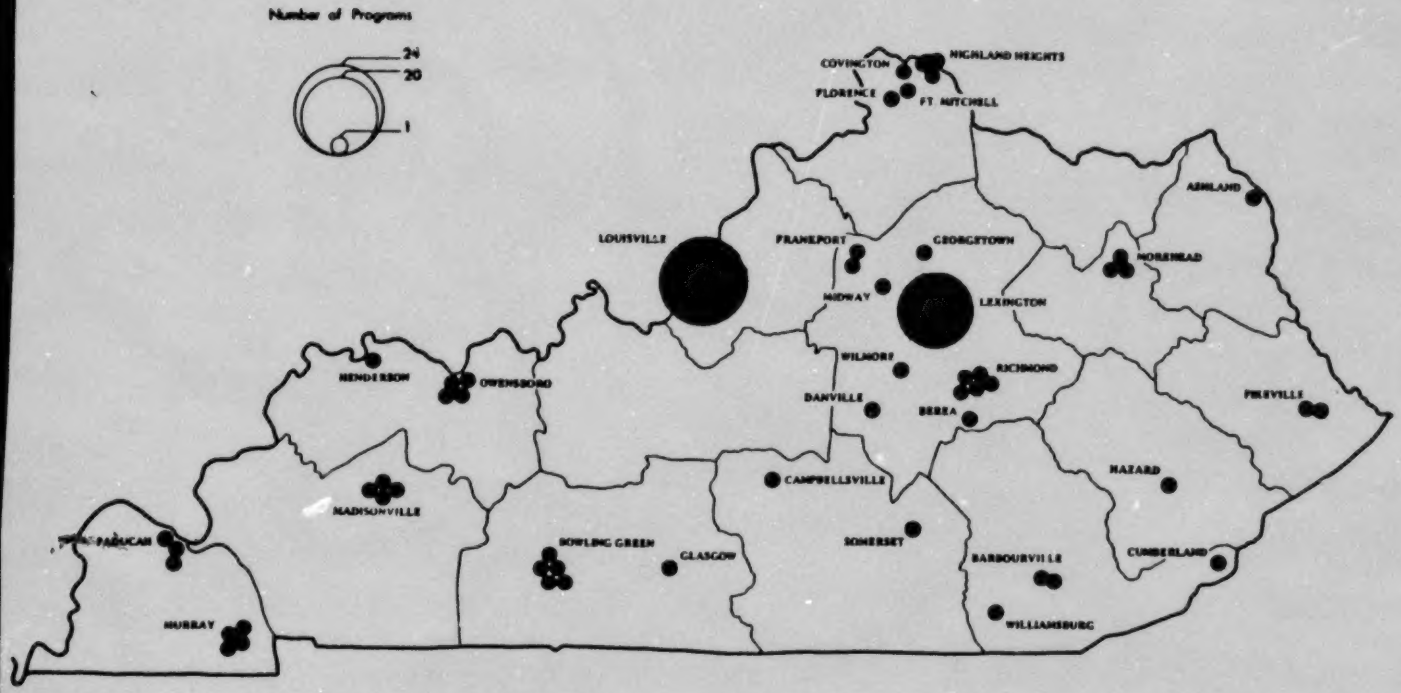
8. Needs Assessment Study Completed. A needs assessment study has been completed which summarizes the allied health needs of college administrators, students and faculty. The results were used to plan KAHP activities.

9. Student Interest in Articulation Surveys Completed. As faculty began to develop the theoretical framework for articulated programs, the following question was repeatedly asked: "Are there sufficient numbers of students wanting to transfer to warrant the time and effort required to negotiate transfer agreements?" To help answer this question, students were surveyed to determine their interest in articulation. Results indicated there is a significant number of students interested in career mobility.

10. Increased Cooperation. The allied health task force and five discipline advisory groups have been meeting regularly for the past three years (i.e., approximately 106 individuals). These meetings have resulted in increased cooperation and communication. Each group has taken action to continue meeting at least annually.

11. System Design. A recommended state system for allied health education has been designed based on the comprehensive results of the Kentucky Allied Health Project.

LOCATION OF ALLIED HEALTH EDUCATION PROGRAMS IN K.A.H.P.



1 PROJECT OVERVIEW

Setting for the Project

The Kentucky Council on Higher Education, a statewide coordinating board, was awarded a grant in 1978 from the U.S. Department of Health and Human Services to develop a statewide system for allied health education. To adequately describe the development of the Kentucky Allied Health Project (KAHP), a brief description/definition of the purposes and functions of coordinating boards will be presented.

Kentucky higher education and Kentucky state government are by necessity linked together, frequently as partners, occasionally as adversaries, . Sandwiched between the public colleges, universities and state government is the Kentucky Council on Higher Education, a statewide coordinating board.

The Council is one of the country's oldest higher education coordinating agencies (1934); however, until it was strengthened in 1966 and again in 1972, it had little authority with which to perform its coordinating responsibilities.

In the 1970's the Commonwealth, through the Council on Higher Education and with the full cooperation of the universities, took the initial steps toward the development of a system of higher education. A 1976 Council report, Kentucky and Comprehensive Planning for Higher Education, states:(1)

> Although Kentucky has a great variety of public institutions, they are not organized into a cooperative system through a coordinated balance of programs, through consideration of unnecessary duplication or overlapping responsibilities....

In 1977, the adoption of institutional mission statements was aimed at organizing a system of higher education. The Council stated that the system was to promote "quality education and research, efficient use of resources, effective communications and smooth movement of students between institutions." The Kentucky Allied Health Project was conceived and designed as a subsystem within this total system. As a subsystem for allied health education, KAHP would strive for both efficient utilization of resources and the development of smooth movement of students between institutions.

The publication entitled "A System of Higher Education in Kentucky Including Mission Statements" presents several characteristics of this system.(2) Two characteristics which directly relate to the goals of the Kentucky Allied Health Project are:

1. "Centralized coordination of program offerings at all levels and among all institutions."

2. "Recognition of and program articulation with the vocational schools in implementing the 'career lattice' concept in post-secondary education."

For a statewide system of higher education to function smoothly, policy decisions must be made that support the characteristics of the system. Each institution must support the system's development. In a system of higher education, one of the central requirements is cooperation between and among institutions.

The Council's belief in and support of a higher education system provided the conceptual framework for KAHP. All curriculum decisions were entirely the responsibility of the cooperating faculty and institutions. In fact, because the Council views academic freedom as a universal and absolute concept, the success or failure of KAHP was directly related to the institutional faculties. These faculties had to support the philosophy of articulation, be willing to engage in curriculum experimentation and to not only consider the needs of their respective institutions but the needs of the state as a whole. Some faculties did this with great success and a sense of commitment to students from all levels of higher education and all types or institutions (i.e., vocational, private, public, hospital based and proprietary); other faculties clung to professional and personal vested interests and were unable to respond to state and/or institutional needs.

The Council's willingness to respect and recognize the claims of academic freedom and procedural autonomy and the institutions' equal willingness to recognize the state's right to participate in statewide planning for allied health education contributed to some of KAHP's success. These cooperative attitudes resulted from the fact that the formal structure brought the institutions and the Council together as partners in a joint venture firmly believing in shared group decision making and leadership.

Purpose of the Project

The purpose of the Kentucky Allied Health Project (KAHP) is to use the resources available to develop and implement a model articulated system of allied health education. The articulated system is viewed in the broadest sense to include articulation in learning (i.e., plans to permit a smooth transition from one education level to another) and articulation in educational planning and resource utilization. There are currently 105 allied health programs in Kentucky, seventy-two (72) of these programs are offered by the public sector. Allied health activities have significantly increased the interinstitutional cooperation and coordination among these programs.

Significance of the Kentucky Allied Health Project

Allied health education programs in the 1960s underwent a significant growth phase fueled by federal monies from the Allied Health Professions Act of 1966. The funding stimulated the coalescence of many programs into schools of allied health professions in a collegiate or university setting. These schools expanded their student enrollments to fill the proliferating programs which represented a response to the nation's diverse health manpower needs.

However, curtailment of direct federal funding coupled with greater governmental demands for fiscal accountability in the late 1970s and early 1980s led to such events as program moratoria and a closer scrutiny of the fundamental goals and objectives of these schools.

While the development of allied health education has been characteristically segmented, the impact on the management of education for the 1980s mandates

activities that are collaborative and articulated. Can allied health education in Kentucky, faced with such driving forces as shrinking economic resources, demands for accountability in costs, productivity and outcomes and changes in major technologies, meet these challenges?

In an attempt to meet these challenges, the Commonwealth of Kentucky has proposed the development of a statewide system for allied health education. This system interlocks segmented educational components into a comprehensive structure. The system is based upon three major social concerns:

(1) The concern to meet the health care needs of the individual.

Many driving forces are pressing for new approaches to allied health education which will culminate in a comprehensive system of care for the patient. If the goal of comprehensive care is to be achieved, there must be meaningful collaborative arrangements.

(2) The concern to meet the needs of students.

Students are seeking mechanisms for career mobility. A system of allied health education must be developed to help meet these needs. Much of the research on vocational choice and career mobility strongly support a flexible system of education with several entry and exit points. The goal of Kentucky's system of allied health education is to eliminate any unnecessary duplication or artificially imposed barriers that inhibit the ability or motivations of the individual.

(3) The concern to slow the spiraling cost of health care.

Allied health education cannot continue to operate oblivious to the cost to the patient. Allied health educators must recognize and find solutions to the problems of (1) eliminating unnecessary program duplication, (2) avoiding overtraining in terms of functions performed, and (3) improving the effectiveness and efficiency of programs.

In summary, the Kentucky Allied Health System is based upon three major social concerns: (1) the goal of comprehensive care for the individual, (2) the educational needs of the students, and (3) better utilization of existing resources.

Several barriers make the task of developing a system for allied health a difficult one; barriers created by curricula, educational institutions, health care facilities, and laws and state government agencies. However, perhaps the most formidable problem is overcoming professional biases. The temptation to exercise territorial imperatives is understandable. However, our greatest success occurred when educators philosophically believed in career mobility. In contrast, our greatest failures occurred when educators did not hold this philosophy and carefully guarded their "territory." To a very real extent, philosophy and territoriality retarded progress.

Perhaps the significance of KAHP is that a system has been developed considering:

What is best for the patient?

What is best for the student?

How can a system of allied health education be developed that is highly efficient and integrated?

Organization of KAHP

Six phases were designed to meet KAHP's major objective of developing and implementing a statewide system of articulated allied health education. These phases are summarized in Table 1.0.

Table 1.0.

Phases of the Kentucky Allied Health Project

Phase I	Phase II	Phase III
Literature Review Manpower/Program Data Program Directory Evaluation Design Task Force	Six Discipline Advisory Groups Evaluation and Research Technical Advisory Group Role and Function Delineations Curriculum Reviews Manpower Models	Model Curricula Potential Articulation Designs Transfer Agreements Drafts System Recommendations
Phase IV	**Phase V**	**Phase VI**
Transfer Agreement Negotiations	Final Articulation Designs Articulation System Preparation Recommendations to CHE for Action	Statewide System Project Evaluation Articulation System Monitoring

To develop a model for statewide planning in allied health education, six disciplinary clusters were chosen. These clusters include: (1) clinical laboratory sciences, (2) dental auxiliaries, (3) nutrition/dietetics, (4) radiological sciences, (5) rehabilitation therapies, and (6) respiratory therapy. All levels of programs within each discipline cluster which existed in Kentucky were included in the system.

Phase I: Planning

KAHP's planning was accomplished by several individuals and groups working in concert providing a rich interplay of ideas and abilities. In the planning phase, the staff began a literature review to determine if similar efforts had been made, their strengths and weaknesses, and their relevance to KAHP. In addition, the staff began to synthesize relevant manpower and educational program data. The merging of allied health manpower data and educational program data was viewed as essential for statewide planning. While the Council collected information regarding public higher education, a complete directory needed to include private education, vocational education, hospital-based programs, and proprietary programs. Consequently, the first planning task was to complete a statewide inventory of allied health education

programs. This inventory provided the basis for activating the discipline advisory groups for Phase II.

The establishment of an overall project evaluation design was also completed in Phase I. The planning and evaluation procedure known as Program Evaluation and Review Technique (PERT) was selected to provide continuous program evaluation of progress toward the achievement of predetermined objectives.(3)

A final activity in Phase I was the activation of the Allied Health Task Force in May, 1979. The fifteen (15) member task force was composed of representatives from the public colleges and universities, independent colleges and universities, vocational schools, practicing clinicians, and hospital administrators. The primary objectives for the task force were to provide general coordination for the project and help secure support for the project from essential publics.

Phase II: Developing and Comparing Curricula

The first step for Phase II was to activate the six discipline advisory groups in September, 1979. The membership for these six advisory groups was recommended by the Allied Health Task Force. Each group was composed of approximately 15 members (a total of 90 individuals). These individuals were chosen to represent public and independent colleges and universities, vocational schools, proprietary schools, hospital-based programs, practicing clinicians, and professional organizations. (See Figure 1.0.) The central concept used in selecting these advisory group members was that those individuals responsible for implementing project recommendations should assume key leadership positions in developing the recommendations. It was also the project staff's basic belief that there should be shared responsibility between educational institutions and the statewide coordinating board for planning a system of allied health education.

In addition to the activation of six discipline advisory groups, the project was also assisted by an Evaluation and Research Technical Advisory Group. The primary objectives of this group were to (1) develop the methods and instruments for the evaluation and implementation phase of the project, (2) review a competencies research model for use by two discipline advisory groups, (3) develop a manpower projection model, (4) develop a graduate follow-up model, (5) develop a program cost assessment model, (6) develop a practitioner profile component, and (7) guide data collection and analysis.

A major activity in Phase II was the delineation of roles and functions for each level of practice within each allied health profession and the identification of competencies by level with the goal of developing curricula. This task was seen as an essential prerequisite to the design of articulation models. Each discipline advisory group approached the delineation of roles and functions differently depending on the success of their respective professional associations.

The respiratory therapy and nutrition/dietetics groups chose to use the Health Services Mobility Study (HSMS) Method of Task Analysis and Curriculum Design (4) since neither group had an acceptable and comprehensive delineation of their practices. The clinical laboratory sciences group validated competencies that had been developed by their professional society. The dental auxiliaries group chose to utilize the roles of dental auxiliaries as specified by the Kentucky Dental Practice Act. While they realized that roles may vary by state, they chose to develop an articulation model that could work within Kentucky.

The radiological sciences group was represented by several similar but yet unique professions (i.e., radiography, radiation therapy, nuclear medicine, and

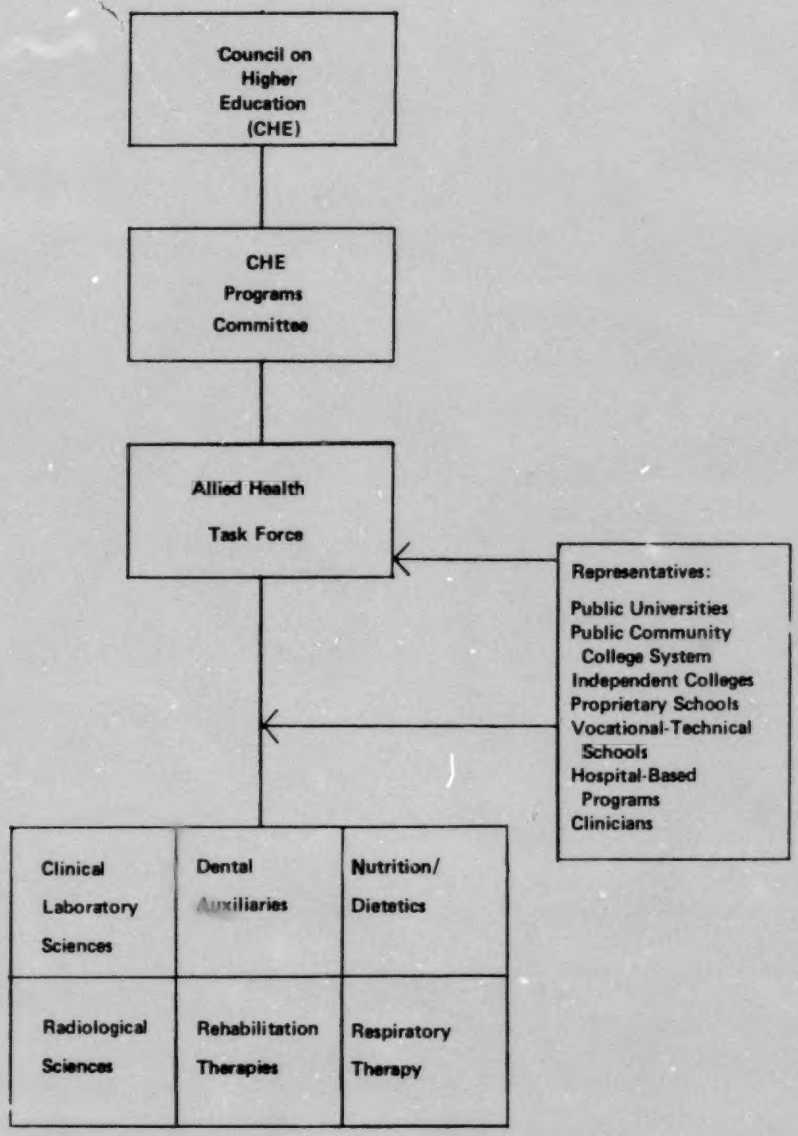


Figure 1.0. Organizational Structure of the Kentucky Allied Health Project

radiation health). This group approached the delineation of roles and functions on separate but parallel paths. Each discipline in the cluster used existing resources to finalize their curricula.

While each discipline advisory group was developing a curriculum that contained the information needed for safe, competent professional practice, they also gathered program-specific information such as course outlines, clock hours, percentage of lecture, lab/and/or clinical components per course, minimal acceptable grades and the pre-professional and professional components of each curriculum. The data provided the fundamental information to begin planning the early phases of transfer negotiations.

Another major activity in Phase II was the development of a resources/requirements model for each discipline for the purpose of manpower projections. The manpower data are essential information when considering the establishment, expansion, continuation, or termination of allied health programs. Three manpower models will be applied to five allied health disciplines studied in KAHP. The models are: (1) manpower-population ratio, (2) trend analysis based on time series, and (3) health needs. Based on the manpower models KAHP completed for physical therapy (5) and respiratory therapy, (6) data are being collected to complete the clinical laboratory sciences and radiological sciences, and dental hygiene manpower models. While the limitations of making manpower projections are recognized, the information added another dimension to statewide planning efforts.

Phase III: Articulation Review

Joint meetings between the discipline advisory groups and the Allied Health Task Force were held in the early summer of 1981. Together the groups (1) reviewed developed curricula, (2) reviewed the articulation designs within each discipline, (3) discussed recommendations for implementing and finalizing draft articulation agreements, and (4) discussed recommendations for implementing, monitoring, and evaluating the system.

These joint meetings provided an opportunity for the groups to share not only their products such as curricula and draft transfer agreements, but also to discuss broader and less measurable outcomes of the process.

For example, the task force representative from vocational education shared the following:

> When the vocational education administrators asked the vocational faculty to participate on this project they agreed, but with little enthusiasm. However, their efforts resulted in the development of mutual respect between vocational education faculty and higher education faculty in the state. In addition, it enhanced communication within vocational educational programs. As a result of this communication, curricula were revised and strengthened. Furthermore, the vocational education faculty feel kinder toward higher education than they have in the past. Previously, they had felt like second class citizens in higher education. They emerged feeling that they were partners or co-equals. Consequently, they felt good about themselves and their programs. We have better vocational education programs because of their efforts.

Phase IV: Developing and Negotiating Transfer Agreements

After the joint meetings of the discipline advisory groups and the task force, mini-meetings were planned with selected task force members and faculty to help plan for the implementation of some of the transfer agreements.

Competency-based education was used as the theoretical framework for developing and negotiating transfer agreements. Types of agreements included the block credit transfer agreement and the course specific transfer agreement. Agreements were negotiated between educational systems and between specific programs/institutions. (7)

Phase V: Preparing the Articulation System

The primary activities in this phase included (1) final preparation of discipline specific articulation designs and (2) the preparation of a comprehensive statewide articulation system. Throughout the project the task force had a major responsibility in the formulation of recommendations for a statewide system. These recommendations will go to the Council's Programs Committee and then to the full Council on Higher Education for action.

Phase VI: Evaluation and Revision

Two primary evaluation components were planned: (1) evaluation of the project's ability to meet its stated objectives and (2) recommended procedures for evaluating the ability of the implemented system to facilitate the entry into and exit from an allied health educational program by capitalizing on student's previous relevant education and experience (i.e., ongoing monitoring of the success of the transfer agreements.)

KAHP's Approach to Leadership.

This section is included to share with others the philosophy upon which the group meetings were planned. In addition it will explain the evoluntary developments in terms of group process. Particular emphasis will be placed on the importance of group centered leadership and leadership as a shared function. It is hoped that by sharing these intimate relationships others will be encouraged to participate in similar endeavors.

Traditional views of leadership: (1) focus on the group's task; (2) the leader directs and controls; (3) the feelings and emotions of group members are not recognized; (4) the leader assumes full responsibility for decisions; and (5) the task becomes more important than individual needs.

These traditional views of leadership were abandoned. KAHP staff viewed leadership as "Group Centered Leadership." While fully recognizing the importance of the task of developing a statewide system for allied health education, we also recognized that member interactions and the emotional reactions of individuals would have a profound effect on the successful completion of our task.

Consequently we viewed leadership as service. Such service included 1) helping the group develop a trusting climate, 2) encouraging members to freely express their feelings and 3) assisting members in accomplishing their task.

Leadership was not something that just the designated project staff members did. Leadership was shared with all members of the group. By recognizing that leadership was a group responsibility, it was also recognized that success or failure would be equally shared by all group members. This concept of shared group leadership was important because it recognized that no one person could possibly be simultaneously aware of all the group maintenance tasks, group building tasks, and individual problems existing at any given moment within the group. Such awareness must be shared by all members of the group.

In summary, our belief in group centered leadership was based on the assumptions that: (1) the meetings were owned by the members; the KAHP

staff was a helper to the group; however, the group was responsible for all major decisions; (2) members not only shared ownership, but responsiblity for completing tasks; (3) feelings, emotions, conflict were recognized as legitimate; and (4) the needs and feelings of all members were viewed as important.

With this as our philosophical framework, we observed each discipline advisory group work through three stages of group development.(8) Stage one considers orientation, hesitant participation, and search for meaning. Our orientation meeting held on September 6, 1979 provided the setting for stage one "goblet issues". During this stage group members size each other up through discussion of nonemotionally laden topics. The term comes from cocktail party type communication where each guest sizes up the others by looking through a cocktail "goblet".

At this meeting Dr. Joy Kirchner, who had written the project grant, described the historical foundation for the project. Project objectives were described along with the roles of the discipline advisory groups and the project staff. Also at this meeting a group process activity called "Self Portrait" was completed. The selfportrait activity was planned to help promote positive relationships among and between discipline advisory group members and project staff. The advisory group members and project staff were asked to draw a story of their lives on a large piece of paper and share this story with the other members of the groups. While on the surface this appears to be a relatively unsophisticated procedure, it provided a successful way to meet one another fairly quickly. Hopefully, it assisted in the development of an accepting environment within which the groups could work during the coming year.

In stage two, issues regarding dominance, control, and power emerge. Hostility to the "leader" may also emerge as the group members realize that the "leader" is not perfect. We found that some meetings were not as effective as others; some advisory groups willingly shared all their available resources, (i.e., curricula, admissions policies and student success/failure rates) while other groups found it difficult to share. Democracy takes time; the price of group decision making and consensus is time, trust, and openness. Futhermore, tradition seemed to inhibit meeting effectiveness. For example, the older more established professions such as clinical laboratory sciences and the rehabilitation therapies had much more difficulty planning sequences of transfer, especially for the professional courses within the curricula. In contrast, respiratory therapy found the task less cumbersome. However, at no time during stage two did we feel overt hostility.

In stage three group members began to have concerns about intimacy and closeness. As the groups began to be able to more freely address their positive and negative feelings, they became more cohesive and mature. This maturity was characterized by the following:

(1) Serious involvement in activities

As the members began to feel a sense of ownership and involvement in their tasks, they assumed greater responsibility for such activites as report writing and team building.

(2) Trust and caring

The trust and caring that emerged in some groups allowed the members to express concerns, feelings, fears, and ideas.

(3) Accepting new members

It was recognized that group membership would always be in the process of change, adding new members and losing old ones. However, new members were accepted and seen as a potential resource.

The previous description basically describes the work of five discipline advisory groups that were viewed as somewhat or very successful. However, not all our discipline advisory groups were successful; and we would like to briefly try to present a rationale for why one group failed. A successful group interacts over time to accomplish one or more goals that are valued by each of the participating individuals.(9) The physical therapy advisory group's philosophy statement stated that there was currently no organized effort on the part of the physical therapy profession to facilitate the upward mobility of the physical therapist's assistant within the profession. Mirroring this philosophy, physical therapy's support of transfer for the assistant was somewhat less than whole hearted.*

As a result the project goals were in conflict with the goals of the physical therapy advisory group members. Because upward mobility for the assistant was not "valued" by this group, the project's objectives for this group were not achieved. This was further reinforced to us by such statements as "I don't feel its appropriate for this group to do more at this time." "Prove there is a need for articulation by a statistical study." "We met our objectives a long time ago, when we stated articulation was not appropriate at this time." "I would prefer if the project were terminated."

To summarize, no matter how competent the group leader or how many resources are available in terms of time and money, if the group does not highly value the goals, the group will fail.

To conclude we would like to offer a number of suggestions that may be useful to newly formed groups that have as their goal the development of articulation agreements:

(1) Develop an awareness for the interdependent behaviors that must be performed by group members.

Task behaviors are those behaviors that are related to achieving the groups goals such as giving suggestions or directions and seeking information. Maintenance functions are those behaviors related to maintaining harmonious relations among members such as helping, rewarding, relieving tension by joking, and showing satisfaction. Both task behaviors and maintenance behaviors are equally important.

(2) View leadership as a shared group function.

By viewing leadership as a shared group function, all members are encouraged to contribute and the sharing of leadership ensures that all the resources of the group will be used productively.

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*While the Rehabilitation Therapy DAG did not develop an articulation model that transferred professional course credit, an articulation agreement between the Physical Therapy Program at the University of Louisville and the Physical Therapist Assistant program at Jefferson Community College was developed after the Rehabilitation Therapy DAG decided to discontinue meeting.

(3) Willingly accept new members.

While a high turnover of group membership may indicate that something is seriously wrong within the group, some turnover is natural. Welcome each new group member as a valuable resource.

(4) Allow "hidden agendas" to surface in open discussion.

Hidden agendas occur because an individual believes that the item may be judged as wrong or inappropriate, rather than as a reflection of a legitimate need or purpose. Remember, group members may be trying to simultaneously achieve individual and group goals. Often the degree to which both goals can be achieved determine the success of the group. Recognize that members may bring a hidden agenda to the group--one they hesitate to share openly because it is so self-oriented. Allow hidden agendas to surface in open discussion so that personal needs may be handled without disturbing the group.

(5) View conflict as natural.

Most substantive issues will involve some conflict. View this conflict as natural and indeed inevitable. Conflict worked through constructively can provide an important success experience for the group. Furthermore, it will reduce the fear of conflict and further strengthen the group.

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The demands for more health services and new technology in the health sciences have contributed to the phenomenal growth in allied health education. In 1960, only one in ten health workers was a physician, by 1970, just one in thirteen.(1) Even with this increase in personnel, the demand for health related services was greater than the manpower to supply them. To help increase the supply, the Congress passed the Allied Health Professions Personnel Training Act in 1966. This legislation provided grants-in-aid to public and private non-profit training centers for allied health education. Since 1966, over $200 million has been awarded under the Allied Health Professions Personnel Training Act.

Also in the late 1960's, three other activities were influencing the development of allied health education.

1. The first comprehensive national study of allied health education was prepared in 1967 at the request of the Surgeon General. The report was completed by the Allied Health Professions Education Subcommittee of the National Advisory Council. It described the status of allied health and set the goal of doubling the output of educational programs. The subcommittee clearly favored the collegiate setting for education and training and recommended that separate allied health education units be established in educational institutions.
2. In 1966, the American Medical Association (AMA) established a Department of Allied Medical Professions and Services out of which grew the current committee on Allied Health Education and Accreditation (CAHEA).
3. In 1967, the Association of Schools of Allied Health Professions--later renamed the American Society of Allied Health Professions (ASAHP)--was incorporated.

A decade later (i.e. 1968 - 1976) in the southern region, the number of allied health programs has increased 174 percent and netted a seven-fold increase in the number of graduates produced. This vast output of graduates will be recurring annually and has produced a significant change in the labor market demand.(2)

The current federal health manpower policy reflects this change in the labor market demand. The federal policy is summarized as follows:(3)

1. There is the belief that the total supply of "health professionals" is adequate, and there is an inherent capacity to produce an adequate supply.
2. There is the belief that the market place will work out problems such as an improper work force mix.
3. The federal government will make an increasingly smaller investment in the training of all health professionals.
4. The government will regulate the manpower arena only as a last resort.

New problems of maldistribution, coordination of resources and cost containment are now viewed as most critical. This emphasis on coordination and general austerity and control is prevalent in both the education and health care delivery sectors.

On the education side, most states have established higher education boards, known as "1202 Commissions" to conduct statewide planning. At the same time, the federal government was emphasizing coordination and cost containment, the Kentucky coordinating board, the Council on Higher Education, became engaged in an analysis to determine the needs of health sciences education in Kentucky.

In October of 1972, the Council approved the establishment of the Health Sciences Advisory Committee. The purpose of this committee was to assist the Council in the coordination of program development in the professional and technical health fields related to higher education. The Committee was further charged with developing recommendations for policies and plans related to the future needs for health care education.

At the request of the Health Sciences Advisory Committee, a task group was appointed to assist in the development of reports. The task group decided to establish "ad-hoc disciplinary study groups" in five major discipline categories. From a series of discussions and a year of monthly one or two-day sessions, a final document entitled Part II, Allied Health Phase I, Planning for Health Sciences Education in Allied Health emerged.(4) The document delineated twelve major issues with respect to allied health education in the Commonwealth and recommendations for their resolutions. To address issue No. 4,

> "The limited articulation and coordination among and between allied health and health related educational programs compromises the extent to which these programs meet Kentucky's health manpower and service needs."

the Council obtained a special project grant from the federal government.(5)

The grant was funded under section 796 of P.L. 94-484, the Health Professions Educational Assistance Act of 1976. Purpose One of 796 calls for projects aimed at the establishment of regional or state systems for the coordination and management of education and training at various levels for allied health personnel and nurses. The grant was awarded in October, 1978 for a period of three years.

Mobility and Articulation

A study of the transfer of credit and the opportunity for career mobility in allied health education indicates that career mobility opportunities vary depending on the basic level of education essential for practice. This can be best

illustrated by describing four possible career mobility or transfer models shown below:

Transfer Models

Model A **Pre-Professional Curriculum**	**Model B** **Basic Professional Curriculum**
Model C **Certificate Basic Curriculum**	**Model D** **Intermediate Professional Curriculum**

Models A and B offer few transfer problems. However, substantial barriers to transfer exist for models C and D. These models were the primary focus of the Kentucky Allied Health Project.

1. Transfer Model A: Pre-Professional Curriculum

This curriculum provides for the completion of general education requirements and prerequisites for the professional education curriculum. The professional curriculum is offered as an upper-division program of study leading to a baccalaureate degree. This is a typical route for occupational therapy, physical therapy, and medical technology. Problems in transferring of credit are rare. Figure 2.1 illustrates this curriculum pattern.

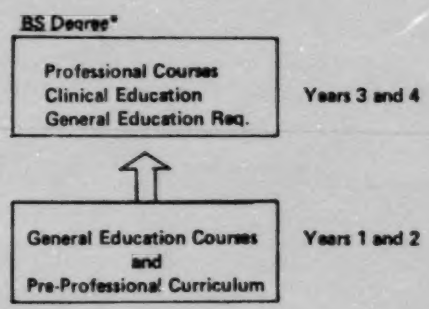

Figure 2.1. Transfer Model A: Pre-Professional Curriculum.

***Curriculum Examples:**

1. **Dietetics**
2. **Medical Technology**
3. **Occupational Therapy**
4. **Physical Therapy**

2. Transfer Model B: Basic Professional Curriculum

Several allied health curricula are offered by two-year, post-secondary institutions which grant an associate in applied science degree. Upon completion, the student is eligible to sit for a licensure, certification or registration examination leading to professional status in the discipline (i.e., dental hygiene, radiologic technology, respiratory therapy).

Advanced study beyond this basic level of preparation is often for teaching, administration, expanded functions or possibly additional basic science study (Figure 2.2). Transferring credit from the basic professional curriculum requires the senior institution to approve a curriculum that represents a departure from a traditional associate degree program.

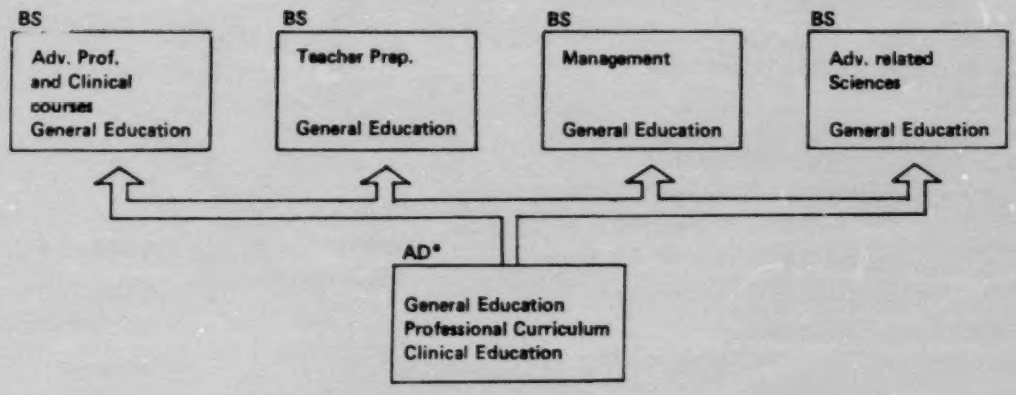

Figure 2.2. Transfer Model B: Associate Degree Basic Professional Curriculum.

*Curriculum Examples:

1. Dental Hygiene
2. Radiologic Technology
3. Respiratory Therapy

Prior to the KAHP, much progress had been made in Kentucky to facilitate transfer Models A and B.

3. Transfer Model C: Certificate Granting Basic Professional Curriculum:

Some allied health professional curricula are offered in hospital based programs or in post-secondary vocational-technical schools which grant a certificate. Upon completion, the student is qualified to sit for a licensure, certification or registration examination leading to professional status in the discipline (i.e., respiratory therapy technician, radiologic technology, and dental assisting).

The curriculum emphasis at this level is on the professional curriculum with related professional science courses. Little or no general education is provided. Often transferring this professional course work to a two-year institution, a senior college or a university is fairly difficult. Figure 2.3 illustrates possible transfer to either the bachelor's or the associate degree.

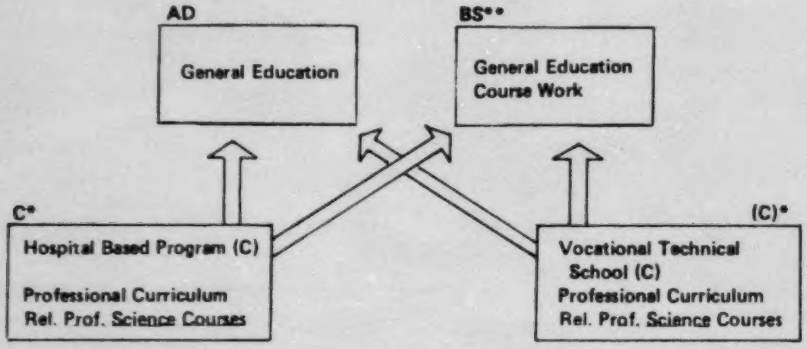

Figure 2.3. Transfer Model C: Certificate Basic Curriculum.

*Curriculum Examples:
**BS may be in advanced clinical courses, teacher preparation, management, or advanced related sciences.

1. Dental Assisting
2. Radiologic Technology

4. Transfer Model D: Intermediate Professional Curriculum

The most significant characteristic of this transfer model is that the completed course of study leads to an intermediate level of professional certification within a discipline (i.e., assistant, technician) (Figure 2.4). Transferring to a senior institution or to an upper-division program within the same institution has traditionally been very difficult. The traditional route to advanced professional studies has been a pre-professional curriculum (i.e., Transfer Model A) not an intermediate associate degree or certificate.

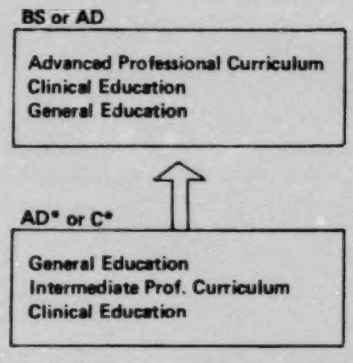

Figure 2.4. Transfer Model D: Intermediate Professional Curriculum.

*Curriculum Examples:

1. Physical Therapist Assistant to Physical Therapist
2. Occupational Therapy Assistant to Occupational Therapist
3. Medical Laboratory Technician to Medical Technologist
4. Dietetic Technician to Dietitian
5. Respiratory Therapy Technician to Respiratory Therapist

Several factors complicate transfer of credit between these two levels. Two of these factors include:

1. Often professional associations have not delineated competencies by level of education.
2. While there is considerable overlap between lower level and upper level courses, the courses are not exactly the same. Consequently, full transfer credit cannot be granted without some curriculum changes.

However, the greatest barriers to transferring this intermediate professional course work are often created by faculty. Faculty biases regarding the essentiality of their specific course(s) inhibits transfer. Similarly, academic snobbery is a very real yet subtle undiscussable barrier. These barriers may seriously inhibit the production of valid information for problem solving and decision making.

Negotiating transfer agreements for intermediate professional curriculum was a primary focus and challenge of the Kentucky Allied Health Project. Since these agreements were by far the most difficult to negotiate, their successful completion was also one of the project's greatest accomplishments. For they required educators to place the needs of students over the needs of facuity or institutions. It is believed that these successes will strengthen allied health education in Kentucky.

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3 STATUS AND ACCOMPLISHMENTS OF EACH ALLIED HEALTH DISCIPLINE IN KAHP

3-1 CLINICAL LABORATORY SCIENCES EDUCATION

For the purpose of the Kentucky Allied Health Project, clinical laboratory sciences included medical laboratory technician programs and medical technology programs.

The overall goal of the discipline advisory group (DAG) was to negotiate transfer agreements between medical laboratory technician programs and medical technology programs.

The following discussion provides 1) an overview of each discipline, including definitions and a description of educational requirements, 2) a description of the negotiated transfer agreements, 3) related accomplishments of the advisory group and 4) a discussion of the work in progress.

Medical Laboratory Technician

In response to the Higher Education Act of 1963 and the Allied Health Training Act of 1966, the one year certificate programs for certified medical laboratory technicians, MLT(C) were established, the first programs being accredited in 1967. The spread of the community college concept added to the impetus of federal funding and by 1971 the third level of the profession, the associate degree MLT(AD) programs were being accredited. Preliminary studies in the mid-seventies indicated that, in practice, there are two, not three levels of personnel in the clinical laboratory. In 1980, it was decided that certification offered by the American Society for Clinical Pathologists for the one year person would no longer be available after August 1982. However, those persons completing the one year program may still become certified through the National Certifying Agency for Medical Laboratory Personnel, sitting for the same exam that graduates of two year MLT programs write.

The first educational level in the clinical laboratory sciences profession is that of the clinical or medical laboratory technician (CLT/MLT). This level of practice may be attained by completion of a structured one or two- year program. These will be considered separately.

The person who graduates from a one-year-approved program offered in a hospital, junior or community college or in a vocational school and who has met certification requirements is designated CLT or MLT (C), dependent upon the certification examination written by the individual. The curriculum consists of introductory courses in psychology, communications, professional relations and organizations, medical law and ethics, scientific-instrumentation, anatomy and physiology, medical terminology, laboratory mathematics, hematology, serology,

blood banking, chemistry, microbiology, clinical microscopy, principles of quality control and record keeping.

Graduates of two-year associate degree programs offered by junior and community colleges and who have met certification requirements are designated CLT or MLT (AD), dependent upon the type of certification examination. The two-year curriculum should include communication skills, interpersonal relationships and social responsibility such as psychology and/or sociology, basic mathematics including dilutions and basic statistics, basic sciences such as elementary anatomy and physiology, microbiology and chemistry including qualitative, quantitative and organic; clinical courses to include hematology, serology, bloodbanking, chemistry, microbiology, principles of quality control and record keeping.

Medical Technologists

The third level in the clinical laboratory sciences profession is that of the clinical laboratory scientist (CLS) or medical technologist (MT), dependent upon certification. These individuals have completed a baccalaureate level program by one of four routes:

(1) completion of two years of preprofessional courses and two years of professional courses (2 + 2);
(2) completion of three years of general education pre-professional courses and a fourth year in an affiliated hospital-based program (3 + 1);
(3) completion of a baccalaureate degree followed by one year in a hospital-based program (4 + 1);*
(4) completion of a CLA and/or MLT curriculum and transfer to a medical technology curriculum.

The curriculum, in addition to courses in chemistry, biological sciences, communications and other general education courses, also covers courses in serology, microbiology, hematology, blood banking, clinical chemistry, principles and practices of quality control, laboratory management, and principles of instruction. The clinical or professional courses, although covering the same areas as the first two levels of the profession, are covered in greater depth in the four-year program.

It is currently possible for a person to by-pass the structured educational programs and still obtain recognized professional certification through alternative routes.

TRANSFER OF CREDIT

Transfer of credit earned from a CLA or a MLT curriculum is difficult for several previously discussed reasons. The profession has not clearly delineated the competencies among levels of practice. Consequently, this intermediate professional curriculum (i.e., Transfer Model D) is often difficult to transfer.

The clinical laboratory sciences discipline advisory group developed the articulation model illustrated in Figure 3.1. After the model was developed, the advisory group developed a model curriculum which delineated the roles and

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*This has not been viewed as a traditional route. Planning sequences of transfer for this route was a primary goal of the DAG.

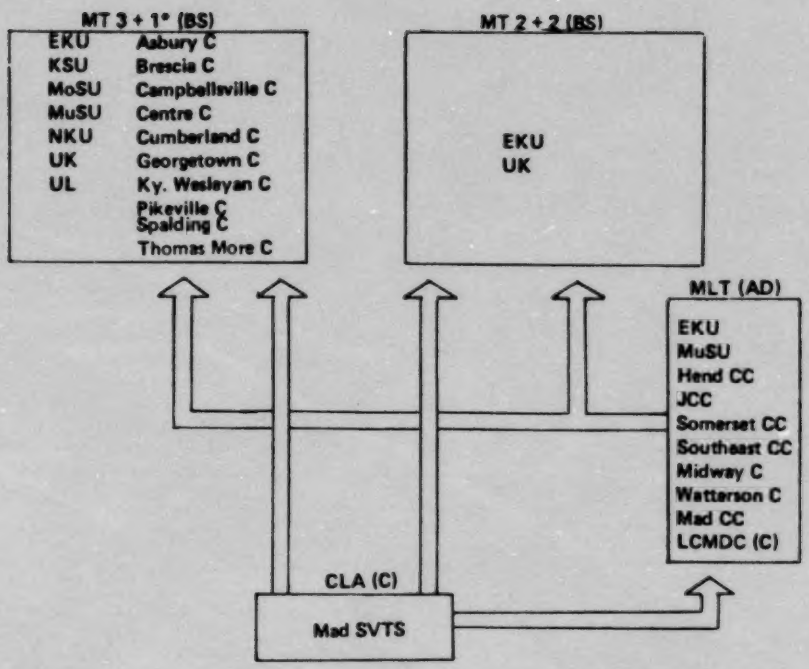

Figure 3.1. Clinical Laboratory Sciences Articulation Model.

Legend:

CLA = Clinical Laboratory Assistant
MLT = Medical Laboratory Technician

EKU = Eastern Kentucky University
Hend CC = Henderson Community College
JCC = Jefferson Community College
LCMDC = Louisville College of Medical and Dental Careers
KSU = Kentucky State University
Mad CC = Madisonville Community College
Mad SVTS = Madisonville State Vocational-Technical School
MoSU = Morehead State University
MuSU = Murray State University
NKU = Northern Kentucky University
UK = University of Kentucky
UL = University of Louisville
WKU = Western Kentucky University

*Fourth year of these MT programs are provided by seven hospital-based affiliate programs in Kentucky.

functions for the three levels of practice. These roles and functions were then used as a guide in reviewing the American Society for Medical Technology competency statements and were the basis for the few changes made in these statements. Objectives were then written, designed to be exit level objectives. Clinical laboratory sciences discipline advisory group members, working in medical laboratory technician and medical technology subcommittees drafted objectives in the areas of hematology, immunohematology, microbiology, immunology and clinical chemistry/urinalysis.

In order to validate these objectives, they were evaluated by 63 practitioners in 28 hospitals and clinics across the state ranging in size from 45 to 500 beds. Additionally, 24 clinical laboratory sciences educators at 13 educational institutions across the Commonwealth also evaluated the objectives. After extensive critique, the objectives were again reviewed by the respective subcommittees, a second draft sent out for evaluation and then final copies of the objectives for each area were developed based on the two sets of evaluations. Each area (i.e., hematology) was then broken down into two levels, basic and advanced, dependent upon whether the objective had been designated MLT or MT.

A model articulated curriculum, based on the Essentials and these objectives was then developed (Table 3.1). The medical technologist would have had courses for all three levels, the MLT (AD) for the two levels, including MLT(C) below it. In this manner, courses could be built on each other much the same as building blocks, creating a final product of an articulated curriculum.

Table 3.1

Model Articulation Curriculum for Clinical Laboratory Sciences

EDUCATIONAL LEVEL	COURSE REQUIREMENTS			
	BIOLOGY	CHEMISTRY	MATH	PROFESSIONAL COURSES
MT	ADDITIONAL BIOLOGY COURSES (TO TOTAL MINIMUM OF 16 SEM. HRS.) IMMUNOLOGY (MAY BE COMBINED WITH ANOTHER COURSE) GENERAL BIOLOGY WITH LAB	ORGANIC OR BIOCHEMISTRY WITH LAB (TOTAL SEM. HRS. = MINIMUM OF 16) QUANTITATIVE CHEMISTRY WITH LAB	COLLEGE LEVEL MATH	ADVANCED LEVEL BASED ON DAG DEVELOPED OBJECTIVES
MLT(AD)	GENERAL MICROBIOLOGY WITH LAB	GENERAL COLLEGE CHEMISTRY WITH LAB (2nd COURSE)		BASIC LEVEL BASED ON DAG DEVELOPED OBJECTIVES
MTL(C)	ANATOMY & PHYSIOLOGY WITH LAB	GENERAL COLLEGE CHEMISTRY WITH LAB	COLLEGE LEVEL MATH	BASIC LEVEL BASED ON DAG DEVELOPED

This model curriculum became a guide for the development of transfer agreements. The actual agreements that were developed are as follows:

FROM	TO
Madisonville Area Vocational Technical School Medical Laboratory Technician Program (C)	University of Kentucky Medical Technology Program (BS)
Madisonville Area Vocational Technical School Medical Laboratory Technician Program (C)	University of Louisville Medical Technology Program (BS)
Madisonville Area Vocational Technical School Medical Laboratory Technician Program (C)	Madisonville Community College Associate in Science Program (AD)
Murray State University Medical Laboratory Technician Program (AD)	Eastern Kentucky University and St. Joseph Hospital Medical Technology Programs (BS)
Murray State University Medical Laboratory Technician Program (AD)	University of Kentucky Medical Technology Program (BS)
Murray State University Medical Laboratory Technician Program (AD)	University of Louisville Medical Technology Programs (BS)
University of Kentucky Community College System Medical Laboratory Technician Program (AD)	Eastern Kentucky University and St. Joseph Hospital Medical Technology Programs (BS)
University of Kentucky Community College System Medical Laboratory Technician Program (AD)	Morehead State University and St Joseph Hospital Medical Technology Programs (BS)
University of Kentucky Community College System Medical Laboratory Technician Program (AD)	University of Kentucky Medical Technology Program (BS)

FROM	TO
University of Kentucky Community College System Medical Laboratory Technician Program (AD)	University of Louisville Medical Technology Program (BS)
University of Kentucky Community College System Medical Laboratory Technician Program (AD)	Western Kentucky University and St. Joseph Hospital Medical Technology Programs (BS)
Watterson College Medical Laboratory Technician Program (AD)	Eastern Kentucky University and St. Joseph Hospital Medical Technology Programs (BS)
Watterson College Medical Laboratory Technician Program (AD)	University of Kentucky Medical Technology Program (BS)
Watterson College Medical Laboratory Technician Program (AD)	University of Louisville Medical Technology Program (BS)
Eastern Kentucky University Medical Laboratory Technician (AD)	University of Kentucky Medical Technology Program (BS)
Midway College Medical Laboratory Technician (AD)	University of Kentucky Medical Technology Program (BS)

A summary of the hours of advanced placement credit proposed to be awarded or being awarded as of Summer 1982 may be found in Table 3.2. Please note carefully that Table 3.2 only summarizes the total credit transferring for MLT coursework (i.e., intermediate professional coursework for such courses as Clinical Chemistry and Urinalysis). Each transfer agreement also specifies the direct transfer of credit for courses such as English, Chemistry, Anatomy, and Psychology. The range of credit transferred for direct credit is 26 to 56 credit hours. The range of credit transferred for intermediate professional coursework is 11.5 to 18 credit hours. The minimum credit hours for an associate degree is 60.

Additionally, an inhouse articulated curriculum has been developed and approved for the Murray State University MT and MLT programs. Madisonville Area Vocational and Technical School (MAVTS) has developed an agreement with Madisonville Community College which will allow graduates of the MAVTS MLT(C) program to be granted two semesters of college credit for their course work at the vocational school if they wish to earn the associate degree at the community college.

Table 3.2*

Total Credit Transferring for MLT Courses at State Universities.

	University of KY Community College System	Eastern Kentucky University	Midway College	Madisonville Vo–Tech	Murray State University	Watterson College	Row Means
Eastern Kentucky University	8 hours transfer plus 8 hours St. Joseph				8 hours transfer plus 8 hours St. Jos.	8 hours transfer plus 8 hours St. Jos.	16 hours
Morehead State University	10 hours transfer plus 8 hours St. Jos.						18 hours
Murray State University					in house articulation complete		———
University of Kentucky	17 hours	17 hours	17 hours	11 hours	17 hours	11 hours	15 hours
University of Louisville	17 hours transfer 4 hours test out			10 hours transfer 11 hours test out	13 hours transfer 8 hours test out	5 hours transfer 15 hours test out	11.5 hours
Western Kentucky University	10 hours transfer 8 hours at St. Jos.						18 hours
Column Means	17.2 hours	17.0 hours	17.0 hours	10.5 hours	15.3 hours	12.5 hours	———

*This refers to admission to the 3+1 Program.

(SUMMER 1982)

Note: This table only summarizes the credit transferrable for MLT courses; each agreement also specifies direct transfer credit for such courses as English, Chemistry, etc. The range of credit transferrable for direct credit is 26-56 credit hours.

Additional Clinical Laboratory Sciences Accomplishments

In addition to the delineation of roles and functions, the development of objectives for clinical courses, the development of a model articulated curriculum and the negotiation of several transfer agreements, the clinical laboratory sciences discipline advisory group also completed the following:

1. MLT Student and Graduate MLT Articulation Interest Surveys. The survey revealed that 80% of current MLT students and MLT graduates would be interested in articulation if career ladders existed. The most often cited ultimate career goal of both groups was performing laboratory tests at the bench. The reasons most often listed by graduates for not being currently enrolled in a four-year program were location of programs and financial reasons.
2. Development of a Clinical Laboratory Sciences Brochure. In order to disseminate the results of the DAC's activities to students a brochure was developed. It was designed to provide general information about the clinical laboratory sciences and to assist faculty/counselors in student advisement.

Currently, a CLS manpower study is in progress. With the support of the Kentucky Hospital Association and the Department for Human Resources, the collection of clinical laboratory sciences manpower data has been made possible. Manpower data being collected include 1) the number of full-time equivalent employees and budgeted vacancies by type of certification, 2) related variables such as level of education, years of experience, and educational programs attended, and 3) laboratory specific data including the number and variety of testing procedures performed and the amount of automation. This information will be used with demographic and economic data to develop an econometric model for forecasting clinical laboratory manpower demand.

For the purpose of the Kentucky Allied Health Project dental auxiliary education included four categories of personnel: 1) the dental assistant, 2) the dental hygienist, 3) the dental laboratory technician and 4) the expanded duty dental auxiliary.

The overall goal of the discipline advisory group (DAG) was to negotiate transfer agreements among and between dental auxiliary programs.

The following discussion provides 1) an overview of each discipline including definitions and a description of educational requirements, 2) a description of the negotiated systemwide transfer agreement, 3) related accomplishments of the advisory group, and 4) potential future transfer agreements.

Dental Assistant

A dental assistant is an individual whose work both supports and delivers dental services in the general areas of operatory, chairside assisting, education, reception and secretarial, and dental laboratory work.(1) Tasks usually performed by dental assistants include preparing the operatory and the patient, transferring instruments during dental procedures, sterilizing instruments, and preparing dental materials.

Dental assisting training takes a variety of forms in Kentucky. Formal training programs range in length from six to twelve months and are offered by a university, proprietary schools, and vocational schools. The program curricula are fairly standardized in content and prepare students for entry-level competency. Formal training is not required in Kentucky (except for taking radiographs) and many dental assistants receive their training on the job. Others have been trained in the military. Dental assistants achieving professional status through these differing pathways are not differentiated by the Kentucky Dental Practice Act, and may all perform equivalent tasks. An assistant may become certified by passing the National Certification Examination. While certification does not affect roles or functions in Kentucky, some states allow specific dental procedures to be delegated only to certified assistants.

Dental Hygienist

A dental hygienist's primary work includes providing oral prophylaxis and providing preventive dental education but may also include supporting and delivering other dental services. Inspection of the oral cavity, di t counseling

and application of decay preventive agents are additional services commonly provided by dental hygienists.

A license granted by the Kentucky Board of Dentistry must be obtained to practice dental hygiene in the Commonwealth. A license is granted only to graduates of accredited dental hygiene programs who have passed the written National Board Examination and a clinical exam. Hygienists trained by the military are not eligible for licensure in most states unless they meet the above criteria.

Dental hygiene programs in Kentucky are offered by three community colleges and two universities. Regardless of the institutional setting, the professional training of the hygienist leading to licensure spans approximately two years.

Dental Laboratory Technician

A dental laboratory technician fills the dentist's prescriptions for various kinds of restorative and corrective appliances but may include other tasks in the general areas of operatory chairside assisting and education. Technicians may specialize in certain types of appliances and prostheses (e.g., orthodontics or crown and bridge) or supply dentists with a full range of laboratory services.

Dental laboratory technicians are trained on the job, in formal educational programs, and military programs. During the first two years of training or work experience, technicians are classified as apprentices by the Kentucky Board of Dentistry. Apprentices may perform any task carried out in a dental laboratory. Upon graduation from a two-year program or after two years of on-the-job training, technicians are registered with the Board. Registration has no effect on the roles or functions of dental technicians. Two to three additional years of work experience are needed for National Certification Examination eligibility. The Kentucky Dental Practice Act differentiates certified dental technicians only in that it requires every registered commercial dental laboratory to employ or be supervised by a certified dental technician.

Expanded Duty Dental Auxiliary

An expanded duty dental auxiliary (EDDA) is a dental assistant, dental hygienist, or dental laboratory technician, to whom new and additional tasks of greater skill and responsibility have been delegated. These tasks, usually intraoral in nature, were formerly performed only by the dentist.

Expanded function auxiliaries in Kentucky are trained on-the-job, through continuing education, or in formal educational programs. Both dental hygienists and assistants may, according to the Kentucky Dental Practice Act, perform expanded functions regardless of the type of training received.

One dental assisting and five dental hygiene programs in Kentucky offer some level of expanded duty training. In addition, two universities offer continuing education programs in expanded functions for on-the-job and formally trained auxiliaries.

TRANSFER OF CREDIT

In planning an articulation model for dental auxiliary education one of the major barriers was the overlapping of competencies among and between the four types of auxiliaries. Consequently, prerequisite to developing articulation agreements, a core curriculum was developed. The core curriculum enables movement from dental assisting to expanded functions to dental hygiene with

exit points at the end of each of the three curriculum phases. The core curriculum laid the foundation for the development of an articulation model in dental auxiliary education with minimal repetition of previously acquired competencies.

The articulated curriculum model (Figure 3.2) begins with content areas containing objectives common to dental assistants, expanded duty dental auxiliaries and hygienists. The next cored level indicates areas having objectives common to expanded functions and dental hygiene. Content areas containing the remaining dental hygiene objectives are listed in the third level. (The competencies and objectives from each content area in these three levels can be found in the dental auxiliary core curriculum document available from the Council on Higher Education.)

This type of model may be useful in planning content sequencing changes to facilitate articulation. This particular model, the "ideal" core curriculum on which it is based, has been developed to show content overlap. Sequencing for articulation within a conceptual framework has not been done. This step is prerequisite to implementation.

The dental auxiliary career ladder proposed by the dental auxiliary DAG is illustrated in Figure 3.3. The model also includes the schools offering dental auxiliary programs and the approximate number of graduates per year. One school graduating dental assistants and laboratory technicians has not participated in KAHP and is not included in the model. The ladder begins with high school graduation or its equivalent. Graduates may directly enter dental assisting, hygiene, or laboratory programs. (All discussions of program entry assume that basic admission requirements are met.) If nontraditional learning takes place prior to program admission, assessment mechanisms will be used to determine appropriate subject exemptions and advanced placement.

The dental assisting graduate has the greatest number of options in the model. He/she may take one of the following routes: a general associate degree program* (essentially the upper level of a 1 + 1) to a baccalaureate program, EDDA training to a baccalaureate program, EDDA training to advanced standing in a dental hygiene program, and a direct move to advanced standing in a laboratory technology or hygiene program. Exit points occur at every level in these routes.

Options for dental hygiene and laboratory technology graduates are more limited; however both may move directly into a baccalaureate program. An additional option for hygienists is to complete an EDDA program prior to a baccalaureate degree.

Of all Kentucky programs appropriate for dental auxiliaries at and beyond the baccalaureate level (e.g., education, health education) only one is included in the model. Unlike the others, it includes courses in dental auxiliary education and advanced clinical skills.

Systemwide Articulation Agreement Negotiated

Working with selected discipline advisory group members, the University of Kentucky Community College System and the Vocational Education System negotiated a systemwide transfer agreement. The agreement specified the following:

- that credit be given for DHY 100 Oral Biology (5 credits), DHY 103 Dental Radiology (2 credits), and DHY 200 Oral Biology III (3 credits).

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*A general associate degree track for dental assistants does not currently exist, but is recommended by the dental auxiliary DAG.

DENTAL HYGIENE

Radiography
Preventive
Preclinical and Clinical Dental Hygiene
Periodontics

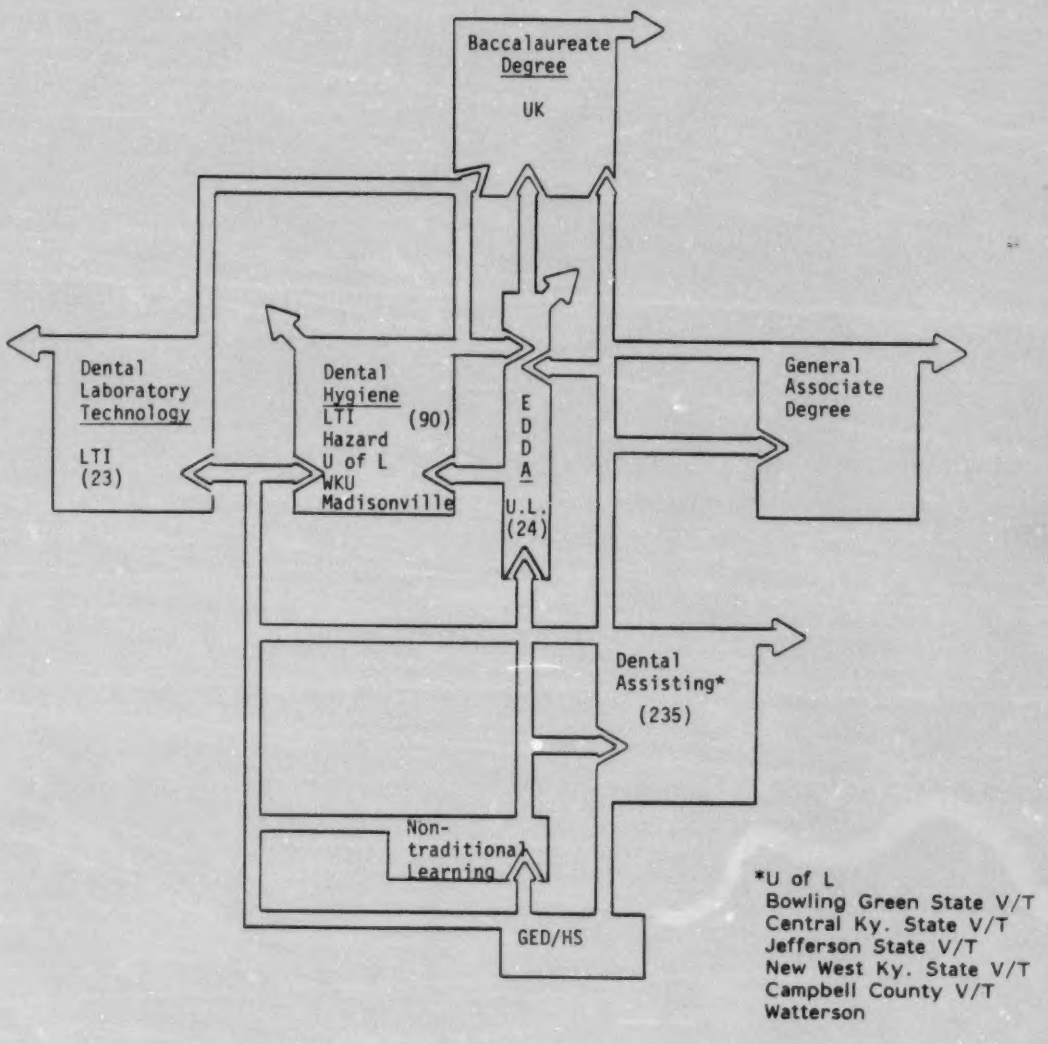
EXPANDED FUNCTIONS AND DENTAL HYGIENE

Pharmacology
Pathology
Communication Skills
Preventive
Oral Histology and Embryology
Psychology
Microbiology
Nutrition
Specialties
Chemistry
Community Oral Health
Radiography
Dental Materials and Restorative Dentistry
Tooth Morphology
Head & Neck Anatomy
Sociology
Clinical Dental Assisting
Periodontics
General Anatomy and Physiology

DENTAL ASSISTING,
EXPANDED FUNCTIONS AND DENTAL HYGIENE

Pharmacology
Pathology
Professionalism-Ethics-Jurisprudence
DAU & Four-Handed Dentistry
Dental Materials & Restorative Dentistry
Head and Neck Anatomy
Periodontics
Specialties
Community Oral Health
Dental Office Emergencies
Radiography
Preventive
Microbiology
Nutrition
General Anatomy & Physiology
Interpersonal Communications
Business and Office Management
Communication Skills
Tooth Morphology
Oral Histology and Embryology
Preclinical Dental Assisting
Clinical Dental Assisting

Figure 3.2. Dental Auxiliary Articulated Curriculum Model.



( ) = Approximate No. of graduates/yr.

Figure 3.3. Dental Auxiliary Articulation Model.

- o that the final report be disseminated to the Community College System and Bureau of Vocational Education for their review, consideration and/or recommendations, and that appropriate action be taken by these units for implementation in June 1981.
- o that implementation of the Articulation and Transfer Plan be effective June 1981.

Additional Dental Auxiliary Accomplishments

In addition to the completion of a systemwide transfer agreement and a core curriculum, the advisory group has completed the following:

1. Statewide Student Articulation Interest Survey. In an effort to more accurately determine student interest in furthering their education in articulated programs, dental auxiliary students were surveyed. Approximately 95 percent of the dental assisting and 100 percent of the EDDA students plan to continue their education. Over 50 percent expressed a preference to attend school part-time. The most frequent reason given for this preference was the need to work. (A complete report is available titled "Dental Assisting and Expanded Functions Dental Auxiliary Student Interest Survey.")
2. A Dental Auxiliary Education Brochure. In order to disseminate the results of the DAC's activities to students, a brochure was developed. It was designed to provide general information about dental auxiliary education, to distribute information about the systemwide transfer agreement and to assist faculty/counselors in student advisement.
3. Increased Articulation between the University of Louisville's Dental Assisting and Dental Hygiene Programs. The University of Louisville's dental assisting and hygiene programs have cored Dental Anatomy and Radiography courses and are considering coring Dental Materials and Expanded Functions courses.

Potential Future Transfer Agreements

The advisory group has identified the following as potential future transfer agreements:

1. An agreement between Western Kentucky University's dental hygiene program and the dental assisting program at Bowling Green State Vocational Technical School.
2. An agreement between Watterson College's dental assisting program and the University of Louisville's dental auxiliary programs.
3. An agreement between Jefferson State Vocational Technical School's dental assisting program and the University of Louisville's dental auxiliary programs.
4. Internal articulation between the University of Louisville's dental assisting program and their dental hygiene program.
5. A systemwide agreement between the dental assisting programs in the Vocational Education System and the dental laboratory technology program at Lexington Technical Institute.

For the purpose of the Kentucky Allied Health Project nutrition/dietetics education included three levels of practice: the dietetic assistant, the dietetic technician, and the registered dietitian.

The overall goal of the discipline advisory group (DAG) was to negotiate transfer agreements among these three levels of education.

The following discussion provides 1) an overview of each discipline including definitions and a description of educational requirements, 2) a description of the role delineation study, and 3) related accomplishments of the advisory group.

Nutrition/Dietetics

The profession of dietetics is dedicated to the improvement of nutrition of human beings, the advancement of the science of dietetics and nutrition, and promotion of education in these and allied areas. The American Dietetic Association (ADA) is the professional membership organization for dietetic practitioners who have met the organization's admission requirements.(2)

Dietetics is concerned with the science and art of human nutritional care, an essential component of health science. It includes the extending and imparting of knowledge concerning foods which will provide nutrients sufficient for health and during disease throughout the life cycle, and the management of group feeding.(3) Since optimal nourishment is fundamental to the growth and development of a human being, to the continuing maintenance of health and well-being and to the recovery from illness and disability, dietetics is a health science. The knowledge and skills used by the dietitian in the art of translation are unique to the specific role which he/she assumes. The differentiation of dietitians is not in their basic scientific knowledge but in their subsidiary knowledge and skills required for a specific function of translation.(4)

There are currently three different levels of dietetic practitioners: the dietetic assistant (DA), the dietetic technician (DT) and the registered dietitian (RD). Additionally a person who has received a bachelor's degree in dietetics but lacks the necessary clinical experience to qualify as a registered dietitian may sometimes be referred to as an ADA dietitian because he/she is a member of the American Dietetic Association (ADA).

Dietetic Assistant

The dietetic assistant, working under the guidance of a registered dietitian, an ADA dietitian, or a dietetic technician, has responsibility in assigned areas of foodservice to individuals and groups. A dietetic assistant is a skilled person who has successfully completed a dietetic assistant's program which meets the standards established by the American Dietetic Association (i.e., 90 hours of classroom experience plus 150 hours of supervised practical experience.) The dietetic assistant is eligible for membership in the Hospital, Institution, and Educational Food Service Society (HIEFSS).

Dietetic Technician

The dietetic technician, working under the guidance of a registered dietitian or an ADA dietitian, has responsibilities in assigned areas in foodservice management; in teaching foods and nutrition principles; and in dietary counseling. A dietetic technician is a technically skilled person who has successfully completed an associate degree program which meets the educational standards established by the American Dietetic Association (i.e., basic classroom and specific nutrition care or food service management requirements, plus 450 hours of supervised practical experience.) The dietetic technician graduate of an approved program is eligible for membership in the American Dietetic Association and the Hospital, Institution, and Education Food Service Society.

Registered Dietitian

A registered dietitian is a specialist educated for a profession responsible for the nutritional care of individuals and groups. This includes the application of the science and art of human nutrition in helping people select and obtain food for the primary purpose of nourishing their bodies in health or disease throughout the life cycle. A registered dietitian has successfully completed the national examination for professional registration by the American Dietetic Association and satisfies continuing education requirements to maintain ADA Registration. Academic and clinical requirements providing eligibility for registration status are specified by ADA.

(1) Academic Requirements:

A baccalaureate degree is required from an accredited college or university providing an academic program that is consistent with the college or university's ADA-approved Plan IV Program. A college or university may be approved to offer one or more of the areas of dietetic specialization (clinical, management, community, general).

(2) Clinical Requirements:

Clinical requirements refer to the practical experiences necessary to be eligible to take the ADA registration exam and become a registered dietitian. There are five different ways available to meet the academic and clinical requirements, but each takes a different length of time, (i.e., coordinated undergraduate programs take a total of four years to meet both types of requirements while traditional dietetic programs take four years plus an additional six months to three years of education to meet the same requirements.)

The total length of time it takes to become a registered dietitian depends on the type of program chosen and is summarized as follows:

	4 years	+	1 year	+	1 year	+	1 year
A.	Coordinated Undergraduate Program (BS Degree)						
	TOTAL = 4 years						
B.	Traditional Undergraduate Program (BS Degree)	+	Dietetic Internship				
			TOTAL = 4½-5 years				
C.	Traditional Undergraduate Program (BS Degree)	+	Master of Science	+	Approved Experience		
					TOTAL = 6½ years		
D.	Traditional Undergraduate Program (BS Degree)	+	Approved Experience				
						TOTAL = 7 years	

A. Coordinated Undergraduate Programs (CUP) are accredited by ADA. Academic and clinical experiences are coordinated within a four-year BS degree program. ADA requires 900-1100 hours of practical experience within the last two years of the BS degree program.

B. Dietetic Internships are also accredited by ADA and usually follow a traditional dietetics (BS) program. A minimum of 900 hours of practical experiences are provided in these post-BS degree programs of 6-12 months in length. Programs may offer the opportunity to receive graduate credit or combine a master's degree program with an internship.

C. Master's (MS) Degree Programs must be followed (within five years) by six months full-time or 12 months half-time successful professional experience in an area of dietetics to meet eligibility requirements for registration.

D. Approved Experience Programs for associate members of ADA are individualized, previously approved and planned professional experiences, requiring three years of full-time or equivalent work after completion of a traditional dietetics (BS) program.

E. Doctoral Degree Programs - Information concerning specific requirements for experience and endorsements is addressed by the American Dietetic Association on an individual basis.

(3) Successful completion of the ADA registration examination is required before becoming a registered dietitian. The exam is given nationwide every spring and fall. The "registered" status is required for employment in certain positions in health care facilities.

(4) Seventy-five ADA-approved continuing education units are required every five years to maintain registration status with ADA.

The American Dietetic Association has begun to rebuild the conceptual framework for the profession, which is the first component in the process of providing specific and differential meaning to each level of dietetic practice.(5) Delineating tasks so that roles of each level of practice are more clearly understood and accepted, enables activities at the professional level to be significantly enhanced through the quality care provided by technical personnel. This was specifically why KAHP undertook such an extensive study of dietetic practice. Without the results of a comprehensive delineation study, planning for and designing a model articulated curriculum could not be accomplished.

The development of an articulation model included delineating dietetic tasks by level of practice. The Health Services Mobility Study (HSMS) Method of Task Analysis and Curriculum Design was adapted to produce a viable delineation of dietetic practices in Kentucky.(6) The tasks were developed to serve as the data source for planning an objective approach to designing a model articulated curriculum in dietetics. The methodology was comprised of six distinct steps.

1. A master list was identified of all "tasks" within the profession.
2. Each task was systematically described according to a strict definition of the term "task."
3. Each task description was scaled for the type and level of skill required for its successful performance and annotated regarding which part(s) of the task requires it.
4. Each task description was then scaled for the type and level of knowledge required for its successful performance and annotated regarding which part(s) of the task requires it.
5. The task list, descriptions and skill/knowledge scalings were validated for accuracy and comprehensiveness by external evaluators.
6. The data were finally analyzed through a series of procedures. Briefly:

    A. scaling values, and therefore, tasks were ranked within and among the tasks;
    B. based on the rankings, cluster analysis was performed to identify groups of tasks;
    C. levels of practice within each group were distinguished by the "increasing" levels and numbers of skills and knowledge areas assigned to the tasks;
    D. job descriptions and corresponding educational objectives were compiled from the task data for the delineated levels of practice.

One of the major advantages of the HSMS methodology is its ability to continually respond to innovative practices without conducting a new delineation study in the future. New or modifications of existing practices can be defined and described according to the HSMS methodology. The same skill and knowledge scaling procedures can be conducted and findings inserted in the existing matrix of computerized task data. What actually would result would be readily computable and retrievable data about how the new practices relate to and influence the existing framework of tasks, levels and job structures. The subsequently revised job structures and their levels would need to be reevaluated for their relevancy in the sequence of dietetic practices. However, the revision and effort to update practices would be minimal in relation to the time and necessary resources required to repeat a delineation study.

Once the DAG's initial study was completed, (Volume 2 - Delineation Study) a mechanism was available for educators and practitioners to consider the negotiation of transfer agreements.

Articulation Model

The DAG developed the articulation model illustrated in Figure 3.4.

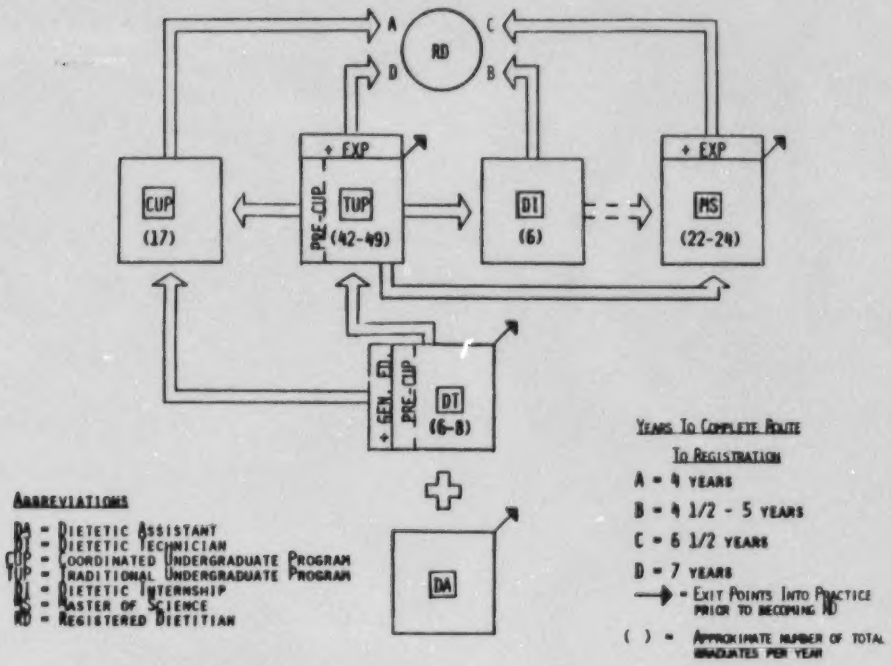


Figure 3.4. Nutrition/Dietetic Articulation Model.

One of the most difficult barriers to implementing the articulation model was the transferring of clinical education credit.

Students graduating from a two-year associate degree (AD) program as dietetic technicians generally are unable to transfer their 450 clinical hours as clinical hours to a baccalaureate program. Therefore, the AD graduate has little or no opportunity to use their clinical credits toward a baccalaureate degree in a traditional undergraduate program (TUP) in dietetics. Also, the AD clinical credits are not generally accepted by a coordinated undergraduate program (CUP) since accreditation by ADA mandates chronological congruence of baccalaureate level didactic and clinical courses. While this appears to be a sound rationale for the BS student, it hinders career mobility for the AD graduate. The question arises to what extent is this hindrance a valid barrier to articulation in dietetics; and how can the barrier be overcome?

As discussed previously, a student graduating from a TUP has several options to becoming eligible to take the registration exam for dietitians:

1) complete a dietetic intership,
2) complete a master's program in nutrition in addition to six months of preplanned and approved work experience,
3) complete three years of preplanned and approved work experience.

A graduate from a CUP is already eligible to take the registration exam upon successful completion of the program.

For Kentucky, the problem becomes apparent after calculating the number of TUP graduates per year (approximately 45) compared to the limited number of available openings for registration eligibility (six internship positions.) (See Figure 3.4.) What happens to the Kentucky TUP graduates with the limited number of options to become eligible to take the registration exam? Do they desire to become registered dietitians? Do they leave the state? Do they work at lower level, lower paying jobs? Do they even practice dietetics at all?

A statewide student follow-up study is currently in progress to help answer these questions.

The DAG recommended developing guidelines for students to present a portfolio of their clinical coursework for transfer of this clinical credit. In addition, based on a comparison of curricula, approximately 25 courses were identified as similar among the undergraduate programs (Table 3.3). These include general education as well as dietetic courses.

TABLE 3.3

Kentucky Undergraduate Dietetic Programs: Basic Curriculum Core

(ADA Plan IV)

Content Areas	EKU (AD)	EKU (BS)	MuSU (AD)	MuSU (BS)	WKU (BS)	MoSU (BS)	Berea (BS)	KSU (BS)	UK (BS)	CUP-UK	CUP-Spald.
English (Composition) (2)	X	X		X	X	X	X	X	X	X	X
Communication (Speech)		X	X	X	X			X		X	X
Psychology	(X)	(X)	X	X	X	X	X	X	X	X	X
Anthropology	(X)	(X)			X		X	X	X	X	
Sociology	(X)	(X)	X	X	X	X	X	X	X	X	X
Educational Psychology (Home Ec. Teaching)	X	X		X		X	X	X	X	X	X
Economics	X	X	X	X	X	X	X	X	X	X	X
Accounting (Food Service Accounting)			X	X	X		X	X	X	X	
Math (for Health Sciences)	X	X		X	X	X	X	X	*	*	
General Chemistry I	X	X	X	X	X	X	X	X	X	X	X
Organic Chemistry	X	X		X	X+	X	X	X	X	X	X
Biochemistry		X		X	X+	X	X	X	X	X	X
General Biology			X	X					X	X	
Microbiology		X		X	X	X	X	X	X	X	X
Anatomy and/or Physiology	X	X		X	X	X	X	X	X	X	X
Human Nutrition	X	X	X	X	X	X	X	X	X	X	X
Advanced Nutrition		X++		X	X	X	X	X	X	X	X
Diet Therapy	X2++	X2++		X	X	X	X	X	X	**	X
Food Preparation	X	X	X	X	X	X	X	X	X	X	X
Meal Management				X	X	X	X	X	X	X	X
Principles of Management	X	X	X	X	X	X	X	X	X	**	
Food Service Sys. (Institutional)	X++	X++	X	X	X	X	X	X	X	**	X
Purchasing (Procurement) (Accounting)		X++		X	X	X		X	X	**	X
Food Production (Quantity)	X++	X++		X	X	X		X	X	**	
Experimental Foods		X		X	X			X	X	X	
Food Service (Institutional) Equipment		X		X	X	X		X	**	**	

(X) Students at EKU have the option to choose one course from psychology, anthropology or sociology.
* Not required unless SAT score is low.
** Content presented in clinical course and, therefore, CUP-UK will not automatically accept transfer of credit.
+ Organic Chemistry and Biochemistry are presented in the same course at Western Kentucky University.
++ Clinical Courses offered in conjunction with these didactic courses are not included in this agreement.

Once the common core of courses was identified, a draft transfer agreement was written. The agreement was based on the fact that all the programs involved were approved or accredited by the American Dietetic Association. However, clinical courses were not included in the agreement.

There were differing philosophies about the most appropriate mechanism to document the comparability of the statewide core of dietetic courses. Some individuals believed it was redundant to write transfer agreements when they were already facilitating transfer on a student by student basis. Although KAHP staff believed the best way to assure students' rights over time was through formal transfer agreements, the democratic process prevailed. Programs refraining from transfer negotiations were still part of the cooperation that matured during KAHP. However, the formal transfer agreement was viewed as the best mechanism to insure continuation of the "agreement" in the event of faculty turnover and other financial and/or political forces.

To date, only Eastern Kentucky University Department of Home Economics has actively pursued signing a formal transfer agreement. The agreement stipulates the provisions by which EKU will award credit for the core of courses identified by the DAG.

In addition, EKU has continued to develop an internal articulation between their dietetic technician program and the baccalaureate dietetics program.

Related Nutrition/Dietetics Accomplishments

In addition to the delineation of roles and functions, the identification of 25 core courses and the negotiation of one transfer agreement, the nutrition/dietetics discipline advisory group also completed the following:

Transfer Guide. The extensive analysis of dietetic programs provided a wealth of data about the variations in curricula, admission policies, retention policies, class capacities and consequently implications for transfer students. The "Counseling Guide for Transfer Students" was compiled directly from the DAG's work and disseminated to all the Kentucky nutrition/dietetic programs. The Guide assists faculty in advising students pursuing career mobility and/or transfer of credit.

Student Brochure. In order to disseminate the results of the DAG's activities (i.e., the common core of courses, educational and career mobility opportunities) to students, the information was compiled in a brochure. It was designed to provide general information about the nutrition/dietetic field and to assist faculty/counselors in student advisement.

Graduate Follow-up. A system of graduate follow-up was designed and implemented by the nutrition/dietetic programs statewide. The procedure involved surveying graduates for the past five years (1977-1981). The questionnaires were developed by the DAG for the purpose of collecting comparable data to address pertinent and unique issues about dietetic programs.

The results of the follow-up study are intended for use during review of existing programs by the Council on Higher Education and also for inhouse assessment by the individual programs. This will be a major cooperative effort to inform the Council about the status of dietetics in Kentucky via a concerted statewide approach.

Student Interest Survey. In an effort to more accurately determine students' interest and awareness of the various routes to registration and intended career goals, students graduating during the current (1981-82) academic year were selected to serve as a survey sample. The DAG designed the form to reflect significant and unique characteristics of dietetics and dietetic education as perceived by students. Briefly, 70% of the respondents indicated their career goals included becoming a registered dietitian and that a significant

number of graduates from the traditional undergraduate programs desire to become registered dietitians. However, only the six post-baccalaureate internship positions remain available. While many of these students would select the masters degree to meet their career goals it appeared questionable if students were fully aware of the coordinated undergraduate program option.

DAG-Task Force Interaction. The nutrition/dietetics DAG made the following recommendation to the allied health task force (TF) regarding the continuation of KAHP activities after the termination of federal funds on June 30, 1982: that a multi-disciplinary task force be formed to represent the allied health programs and continue the statewide forum for articulation and other allied health concerns. As a result of the DAG's suggestion, the allied health task force was expanded to include a representative from each of the five disciplines involved in KAHP. Therefore, comprehensive and informed discussions and decisions about the specific professions can be maintained. It was the insight of the nutrition/dietetics DAG members about the purpose and achievements of KAHP which led to a feasible solution to statewide communication.

Additionally, the DAG plans to continue meeting on an annual basis so that two-way DAG-TF communication will continue.

Kentucky Dietetic Association (KDA) Involvement. The nature of DAG/KAHP activities demand ongoing update to maintain the relevancy of selected achievements. For example, the common core of courses may change as programs modify their curricula. Such changes would also influence the "Conditions of Agreement for Transfer of Credit", student brochures and the Counseling Guides. Consequently, the DAG approached the KDA Board, requesting the Career Guidance Committee be responsible for annual update and dissemination. Once the Board approved the request, a manual was compiled of the information pertinent for the data collection/update procedures and presented to the Board and Career Guidance Committee.

Future activities of this advisory group include the following:

Future meetings. The DAG will continue to meet at least annually and also maintain an active member on the allied health task force. Although the task force plans to meet quarterly, the nature of Kentucky Dietetic Association involvement will facilitate communication between DAG members throughout the year.

Manpower Study. Based on the DAG's recommendation to conduct a manpower study of dietetic personnel in Kentucky, the KDA Board approved the survey. Members of the Board (including some DAG members) will organize the study and approach the Kentucky Hospital Association for its support. Additionally, the models KAHP used to implement similar studies in respiratory therapy, clinical laboratory science and radiological sciences were made available to KDA.

Graduate Follow-up. The responses from this study are currently being analyzed. Comprehensive results will be shared with the DAG. It is anticipated the DAG will be able to provide valuable information to the Council on Higher Education during its review process for existing programs.

For the purpose of the Kentucky Allied Health Project, the radiological sciences included a cluster of five related yet distinct disciplines:

(1) radiologic technology,
(2) nuclear medicine technology,
(3) radiation therapy technology,
(4) medical physicist, and
(5) radiological health.

The overall goal of the discipline advisory group (DAG) was to negotiate transfer agreements among and between radiological sciences programs.

The following discussion provides 1) an overview of each discipline, including definitions and a description of educational requirements, 2) a description of the negotiated transfer agreements, and 3) related accomplishments of the advisory group.

Radiologic Technology (Radiography)

A radiographer is responsible for the administration of ionizing radiation to humans or animals for diagnostic or research purposes. Following the instruction of a specialist physician (radiologist) radiographers use x-ray films (radiographs) to examine patients for use in diagnosis of human medical problems such as broken bones, ulcers, tumors, or disease or malfunction of various organs. The radiographer adjusts the x-ray equipment to the correct setting for specific examination, positions the patient, makes the required number of radiographs. The radiographer administers chemical mixtures to patients under the supervision of a physician so that certain organs show up clearly in x-ray examinations. In addition, the radiographer may use mobile x-ray equipment at a patient's bedside and in surgery.

Twenty-four month curricula are available in hospitals, colleges and universities with approved clinical affiliations. The hospital-based programs award a certificate. The college programs award an associate or bachelor's degree. The radiographer must possess and demonstrate knowledge of and competencies in, but not limited to, the following areas: human structure and function, medical ethics, medical terminology, pathology, patient care, positioning, principles of radiographic exposure, quality assurance, radiation physics, radiation protection and radiobiology.

Nuclear Medicine

Both the nuclear medicine technician and the nuclear medicine technologist work with radiopharmaceuticals administered to patients for diagnosis and treatment. The technician or technologist receives, positions, and attends to patients and abstracts data from patient records; makes dose calculations on radiopharmaceuticals for use in patients; and is responsible to the nuclear physician in the operation of imaging and counting instrumentation using radiopharmaceuticals. Both the technician and the technologist are concerned with the safety of the patient and must be aware of and responsible for the dose levels administered to the patient during diagnosis and treatment. While both may be involved, the technologists will be prepared to assume a greater degree of responsibility for the disposal of radioactive waste materials, the safe storage of radioactive isotopes, and maintaining inventory control of radiopharmaceuticals used in the treatment center during the diagnostic procedures. The technologist also has preparation in management, education and research.

Programs are generally one year in length. Institutions offering accredited programs may provide an integrated educational sequence leading to an associate or baccalaureate degree over a period of two or four years. A two-year (associate degree) educational program for nuclear medicine technicians and a four-year (baccalaureate degree) educational program for nuclear medicine technologists exist in Kentucky. In both instances, the professional curriculum specifically related to nuclear medicine technology should be a minimum of twelve months in length. Courses of study offered to students usually include basic anatomy and physiology, pathology, mathematics, radiation physics, nuclear physics, medical instrumentation, radiation biology, radiation protection, basic laboratory testing procedures, the clinical application of radionuclides, and a variety of related studies such as patient care, medical ethics, medical terminology and quality assurance.

Radiation Therapy Technologist

The radiation therapy technologist assists the radiologist in the treatment of disease by exposing affected areas of the patient's body to prescribed doses of x-ray or other ionizing radiation. The radiation therapy technologist must maintain proper operation of controlling devices and equipment used in radiation treatment, and must share the responsibility with the radiologist for the accuracy of treatment records. The radiation therapy technologist operates complex radiologic equipment and must be mechanically inclined in addition to having an aptitude and ability in the physical sciences and mathematics.

One-year program. An applicant to an approved one-year educational program in radiation therapy technology must be either a graduate of an approved educational program in radiologic technology, a registered nurse with an educational background in radiation physics, or possess equivalent qualifications. The educational program must be at least twelve months in length, and include study in physics, mathematics, pathology, radiobiology, anatomy, treatment planning, nursing procedures, radium therapy, protection and shielding, and professional ethics.

Two-year program. The Essentials of an Approved Education Program for the Radiation Therapy Technologist - Two-Year Program were approved by the AMA house of delegates in November, 1981 to provide an alternate educational program for preparation of the radiation therapy technologist. Applicants to an approved two-year program need not be graduates of approved programs in

radiologic technology, but must be qualified as high school graduates or equivalent, with acceptable educational background in the basic sciences and mathematics. The educational program must be at least 24 months in length, and the curriculum includes entry level study in the basic principles of the use of ionizing radiation and related basic sciences.

Medical Physicist

Medical physics is primarily an applied branch of physics. It is concerned with the application of the concepts and methods to the diagnosis and treatment of human disease. It is closely allied with medical electronics, the development of medical instruments, bioengineering which is the application of engineering principles to biology and medicine, and with health physics, the assessment and control of radiation hazards. Medical physicists are concerned with three areas of activity: research, consultation with physicians, and teaching.

Many U.S. universities offer a variety of academic programs in medical physics leading to a master's or doctor's degree. The most common program is called medical physics or radiological physics and is concerned mainly with the physical properties and medical applications of radiation of all wavelengths.

Academic training alone does not make a medical physicist. Practical experience with clinical problems is essential, and may be obtained by a practicum or traineeship.

Radiological Health Science

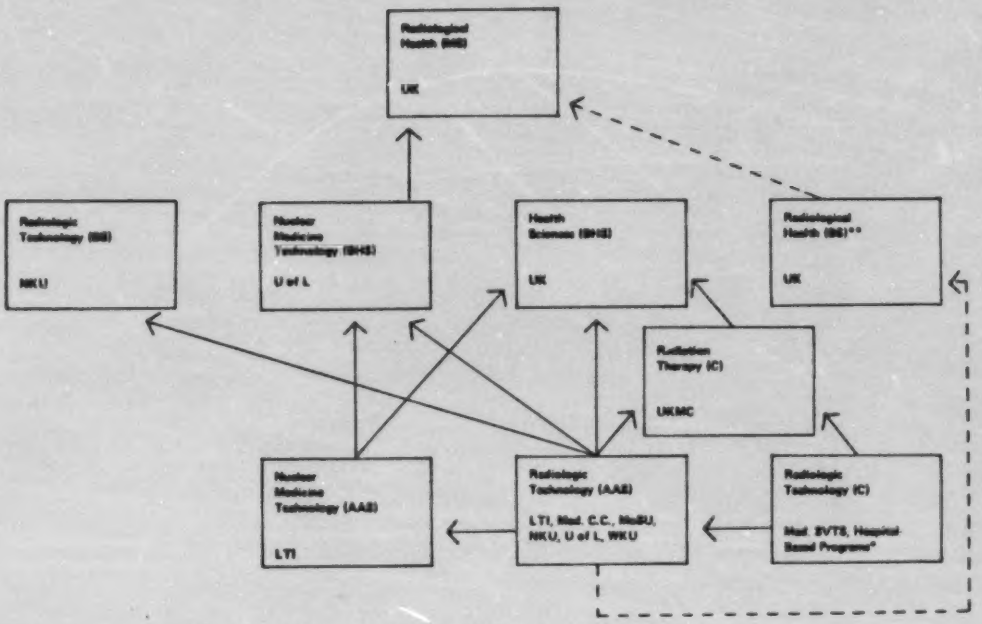
The profession of health physics/radiological health prepares individuals to work in hospitals, universities,and industry as radiation safety officers, in nuclear power plants as health physicists or radiation safety engineers, in national laboratories as health physicists and in federal and state agencies as regulators.

Radiological health specialist curricula may lead to a bachelor's or a master's degree. The curricula include knowledge and skills derived from the field of physics, mathematics, chemistry, biology, medicine and management. For this reason, the required curriculum covers a wide spectrum of subject areas. The graduate of a radiological health science program should have professional competencies in the following areas: 1) evaluation of exposure or contamination levels, 2) design and analysis of shielding, 3) radiation protection education and training of professional and/or lay personnel, 4) research and development of radiation standards and guidelines, 5) personnel monitoring and 6) decontamination operations.

TRANSFER OF CREDIT

The radiological sciences discipline advisory group was unique in that it consisted of several professions that while related were each unique. Consequently, at the beginning of the project, each discipline worked separately to develop a model competency-based curriculum. Once the curricula were developed, the advisory group members worked in minigroups to develop sequences of transfer. The theoretical articulation model that was developed by the advisory group is illustrated in Figure 3.5. Using this model, the entire group considered all possible sequences of transfer among the five interrelated disciplines.

This work resulted in completion of the matrix illustrated in Figure 3.6. Note when considering all of the radiological sciences programs in the state, a total of 76 transfer agreements were identified as possible. After each potential transfer agreement was identified, the respective program directors drafted a



Legend:

LTI = Lexington Technical Institute
Mad C.C. = Madisonville Community College
Mad SVTS = Madisonville State Vocational Technical School
MoSU = Morehead State University
NKU = Northern Kentucky University
UK = University of Kentucky
U of L = University of Louisville
WKU = Western Kentucky University

*Hospital-Based Programs:

Good Samaritan
King's Daughters
Owensboro-Daviess County
St. Joseph
Sts. Mary & Elizabeth
William Booth Memorial

**This program is proposed but does not currently exist.

Figure 3.5. Radiological Sciences Articulation Model.

FROM \ TO	Bellarmine Rad. Tech.	Good Samaritan Tech.	Lex. T.I. Rad. Tech.	MoSU Rad. Tech.	NKU Rad. Tech.	WKU Rad. Tech.	U of L Rad. Tech.	Madisonville Rad. Tech.	Jeff. St. Voc./Ed. R.T. (L)	Lex. T.I. Nuclear Med.	UK Med. Center Rad. T.	U of L Nuclear Med.	UK Bach. H. S.	UK M.S. Rad. Health
Bellarmine Rad. Tech.										1	2	3	4	
Good Sam. Rad. Tech.	5		6	7	8	9	10	11		12	13	14	15	
L.T.I. Rad. Tech.										16	17	18	19	20
Morshead Rad. Tech.										21	22	23	24	25
Northern Ky Rad. Tech.										26	27	28	29	30
Western KU Rad. Tech.										31	32	33	34	35
U. of L. Rad. Tech.										36	37	38	39	40
Madisonville Rad. Tech.	41		42	43	44	45	46			47	48-C 74-AD	49-C 75-AD	50-C 76-AD	
Jeff. St. V/T Lim RT	51	52	53	54	55	56	57	58						
L.T.I. Nuc. Med.	59		60	61	62	63	64				65	66	67	68
U.K. Med. C. Rad. Therapy										69	70	71	72	
U of L Nuc. Med.														73

Figure 3.6. Radiological Sciences Articulation Matrix.

preliminary statement of transfer. These preliminary statements provided input into the transfer agreements that were eventually negotiated.

The agreements that have been negotiated to date are as follows:

FROM	TO
Radiologic Technology Good Samaritan Hospital (C)	Radiological Technology University of Louisville (AD)
*Radiologic Technology Good Samaritan Hospital (C)	Radiologic Technology University of Kentucky Community College System (AD)
*Radiologic Technology St. Joseph's Hospital (C)	Radiologic Technology University of Kentucky Community College System (AD)
*Radiologic Technology King's Daughters' Hospital (C)	Radiologic Technology University of Kentucky Community College System (AD)
*Radiologic Technology Good Samaritan Hospital (C)	Radiologic Technology Morehead State University (AD)
*Radiologic Technology Good Samaritan Hospital (C)	Radiologic Technology Northern Kentucky University (AD)
*Radiologic Technology Sts. Mary & Elizabeth Hospitals (C)	Radiologic Technology University of Louisville (AD)
*Radiologic Technology King's Daughters' Hospital (C)	Radiologic Technology Morehead State University (AD)
Radiologic Technology Madisonville Vo-Tech School (C)	Radiologic Technology University of Kentucky Community College System (AD)
*Radiologic Technology Statewide (C) (AD)	Nuclear Medicine University of Louisville (BHS)
Radiologic Technology Statewide (C) (AD)	Radiation Therapy University of Kentucky (C)
*Radiation Therapy University of Kentucky (C) Simultaneous Registration	Health Sciences University of Kentucky (BHS)

*Final approval/signature pending.

Related Radiological Sciences Accomplishments

In addition to the development of a curricular component matrix, the development of a theoretical articulation model and the negotiation of several transfer agreements, the advisory group also completed the following:

1. Updated ASRT 1976 Radiologic Technology Curriculum Guide. The advisory group updated the 1976 ASRT curriculum guide. In addition, entry level clinical procedures were written in a uniform format.
2. Completion of a Student Articulation Interest Survey. The survey revealed that approximately 83 percent of the respondents would like to transfer course credits toward a higher degree in another radiological sciences program. The most often cited career goal was to become a staff technologist (i.e., 43 percent). Approximately 84 percent of the students surveyed expected to be part-time students. The primary reasons given for part-time status were financial need and family responsibilities.
3. A Radiological Sciences Brochure. In order to disseminate the results of the DAG's activities to students, a brochure was developed. It was designed to provide general information about radiological sciences education, to distribute information about the negotiated transfer agreements and to assist faculty/counselors in student advisement.

Currently, a radiological sciences manpower study is in progress. With the support of the Department for Human Resources and the Kentucky Hospital Association, facilities including KHA hospitals and individuals licensed to work with ionizing radiation have been surveyed and results are being analyzed. The purpose of the manpower study is to collect data that will 1) provide a more accurate profile of Kentucky's radiological sciences personnel (i.e., radiologic technologists (radiographers), nuclear medicine technologists, radiation therapy technologists, ultrasonographers, computerized tomography technologists, medical physicists, and radiation health safety officers); and 2) profile the existing need for the various personnel and identify areas of shortage and/or maldistribution as an indicator of a need for graduates of the various programs.

In addition, a subcommittee of the DAG is developing standard clinical education modules for radiologic technology.

For the purpose of the Kentucky Allied Health Project, rehabilitation therapy included physical therapy and occupational therapy.

The overall goal of the discipline advisory group (DAG) was to negotiate a transfer agreement between the physical therapist assistant program and the physical therapy program.

The following discussion provides 1) an overview of each discipline including definitions and a description of educational requirements, 2) a discussion of the barriers to the transfer of credit, 3) a description of the negotiated transfer agreement, and 4) related accomplishments of the advisory group.

Physical Therapy

Physical therapy, according to the American Physical Therapy Association, is a health care profession which develops, coordinates and utilizes selected knowledge and skill in planning, organizing and directing programs for the care of individuals whose ability to function is impaired or threatened by disease or injury.

Employment opportunities are available in a variety of settings including departments of physical therapy in general or specialized hospitals; schools for crippled children; physicians' or physical therapists' offices and clinics; long term care hospitals and nursing homes for the chronically ill or elderly; community and governmental agencies providing health services; rehabilitation centers; home health agencies; research centers; the Armed Forces; and in colleges and universities offering educational programs for physical therapists and physical therapist's assistants.

Physical therapy incorporates a broad spectrum of activities such as direct patient care, consultation, supervision, teaching, administration, research and community service. It also accepts responsibility for education at many levels, recruitment of personnel, professional and ethical standards of practice, and for the welfare of patients and its own members.

There are three officially defined levels of physical therapy practitioners:

(1) the professional qualified physical therapist,
(2) the physical therapist's assistant, and
(3) the physical therapy aide.

Physical Therapist

The physical therapist (PT) is a health practitioner who develops, coordinates and utilizes selected knowledge and skill in planning, organizing, and directing programs for the care of individuals primarily with impaired function related to the neuromusculoskeletal, pulmonary, and cardiovascular systems focusing on the selection and application of appropriate therapeutic procedures and the appraisal of the results of treatment.

Evaluation includes performing and interpreting tests to assist in differential diagnosis, and to determine the degree of physical impairment. Evaluation provides the basis for the selection of appropriate therapeutic procedures and the appraisal of the results of treatment.

Therapeutic procedures include exercises for increasing strength, endurance, coordination, and range of motion; stimuli to facilitate motor activity and learning; instruction in activities of daily living and the use of assistive devices; and the application of physical agents to relieve pain or alter physiological status.

Most physical therapy programs are bachelor's degree programs and take place in an approved college or university. There are two bachelor's degree programs in physical therapy in Kentucky at the University of Kentucky Medical Center and the University of Louisville.

Certificate physical therapy programs require a bachelor's degree in a field related to physical therapy and fulfillment of certain science requirements for admission. It is generally a 12 to 16-month course and upon completion of the program a certificate is awarded. Graduates of certificate programs are considered equally as qualified as graduates of bachelor's degree programs.

Entry-level physical therapy master's degree programs require a bachelor's degree in a related field for admission and usually last two years. Upon graduation, the recipient of a master's degree usually finds employment in a teaching, supervisory or administrative position.

Physical Therapist's Assistant

The physical therapist's assistant (PTA) is a skilled technical health worker who assists the physical therapist in patients' treatment programs and in other activities necessary to the operation of a physical therapy service as assigned by the physical therapist. He/she has graduated from a two-year college program with an associate degree in physical therapist assisting.

Activities of the physical therapist's assistant include: 1) assisting the physical therapist in determining the physical therapy needs of any patient referred for treatment by gathering data, 2) applying designated treatment procedures in a manner that reflects an understanding of each patient's status (i.e., physical, emotional, cultural and socio-economic), 3) recognizing and responding to acute changes in the patient's physiological and emotional state and 4) functioning as an effective health care provider within the community and the health care system.

Physical therapist's assistant programs are located in community or junior colleges accredited by the appropriate regional accrediting agency. The two-year course of study includes biological, physical, and social sciences, humanities, physical therapy technical courses, and clinical experience. Graduates may complete an associate degree program in Kentucky at Jefferson Community College.

Physical Therapy Aide

The physical therapy aide is a nonlicensed worker at least 18 years old who has completed an on-the-job training program in a hospital or clinic

facility. The physical therapy aide's primary function is to perform designated routine tasks related to the operation of a physical therapy service, but may assist with patient related activities which are predetermined for each patient and assigned by the professional physical therapist. The aide works under the supervision of a professional physical therapist.

Occupational Therapist

Occupational therapy is a health profession providing services to people whose lives have been disrupted by physical injury or illness, developmental problems, the aging process and social or psychological difficulties. Through the use of selected educational, vocational and rehabilitation activities individuals are helped to reach the highest functional levels possible, become self-reliant and build a balanced life style of work and leisure.

Educational preparation of the occupational therapist (OT) requires four years of college training leading to a bachelor's degree in occupational therapy. Certificate and master's degree programs are available for those already holding a bachelor's degree. The programs are usually of 18 to 22 months duration. Graduates of approved programs become registered occupational therapists upon successful completion of the National Certification Examination.

Occupational Therapy Assistant

The occupational therapy assistant (OTA) works under the supervision of the occupational therapist instructing patients in manual and creative arts and activities for daily living. The OTA prepares and lays out work materials and supplies, and assists in maintaining tools and equipment. The OTA reports to the occupational therapist regarding patient progress and may request possible changes in procedure.

The occupational therapy assistant is a high school graduate (or equivalent) who has completed either an associate degree program in an accredited junior/community college or a one-year program in an accredited educational institution or a 20-25 week program in a hospital or community agency. Course work focuses on human physiology, the activities of daily living, and includes a minimum of two months supervised field work.

TRANSFER OF CREDIT

The primary charge to the rehabilitation therapy discipline advisory group was to develop transfer agreements in rehabilitation therapy. Since there were only three rehabilitation therapy programs in the state, (i.e., two physical therapist's assistant program, one physical therapy program, and one occupational therapy program) the primary charge was to develop an agreement to transfer the intermediate professional curriculum (i.e., Transfer Model D; physical therapist's assistant) to the professional curriculum in physical therapy. The advisory group identified the following eleven barriers to this charge and to potential articulation in occupational therapy:

1. There is a lack of specifically identified entry-level competencies of the PTA, the PT, and OTA and the OT, respectively.
2. There is not enough time in the two years of the PTA or the OTA program to meet the general education components of those programs, respectively, and also to satisfy the general education components and prerequisites of the PT or OT program, respectively.
3. The sequence of content and skill courses and/or units are offered over a two-year period for the PT or OT student. The specific content is

provided in a sequential building process based on the specific needs of the student at a specific point in time. The PTA or OTA courses and/or units are offered in a one-year period with courses and/or units combined in a different manner to meet the specific needs of the PTA or OTA student at each point in time.

4. There is a lack of incentive for faculty to make the changes identified for the PTA or OTA to articulate with the PT or OT program, respectively, due (in part) to the small number of individuals requesting or qualified for entrance into the PT or OT programs, respectively.
5. The general education and university requirements of each educational institution are unique to each institution.
6. All educational institutions do not offer the prerequisites required by the PT program at the University of Kentucky or by the OT program at Eastern Kentucky University.
7. Not all colleges and high schools have counselors adequately familiar with the role, opportunity and need for PT or OT personnel and their educational requirements.
8. The articulation of educational experiences of similar programs (PTA, PT, OT) is limited due to the development of these programs in separate institutions.
9. The state supported educational system has not provided encouragement and/or resources for PT or OT to enhance their professional growth through graduate programs in the disciplines.
10. The limited number of programs (one) and the limited number of OTAs and OTs in Kentucky is a barrier to the study of occupational therapy in the state.

A more complete discussion of these barriers with recommendations is included in the Rehabilitation Therapy Final Report available from the Kentucky Council on Higher Education. In addition to this discussion, the advisory group wrote the following statement (1979-80):

> At this time there does not appear to be an organized effort on the part of the physical therapy profession to facilitate the upward mobility of physical therapist's assistant within the profession. The American Physical Therapy Association (APTA) has not taken a formal stand on the desirability of articulation between physical therapist's assistant and physical therapy programs.
>
> Historically, the profession's support for the development of the PTA has been somewhat less than whole hearted. It appears that the development of the PTA resulted from a desire to insure the quality of physical therapy services and, also, in response to external pressure for this level of supportive personnel. The need for this individual was not universally accepted by the profession.
>
> Subsequently, when programs were developed for PTAs, they were not intended to be access routes to the profession. The profession at large tends to identify the PTA as an individual who has chosen the role of the assistant and is not necessarily seeking upward mobility. The primary goal of the PTA curriculum is to provide the learner with the technical skills associated with rendering physical therapy services.
>
> Although the potential exists to award credit in a physical therapy program for prior academic experience, there is little inherent value in the

process. In no instance would a student be able to "test-out" of an entire course, and exempting students from small selected sections of a course would result in a loss of continuity and the real possibility of missed information. Finally, although the students' course load might be decreased slightly, it would not alter the length of time spent in the professional physical therapy curriculum.

It is questionable that with modification of the present PT and PTA curricula (at the University of Kentucky and Jefferson Community College, respectively) that articulation will be enhanced. Possible sequellae or such modification could:

1. Create a PTA curriculum that is unnecessarily difficult for the majority of entrants. This is especially pertinent since so few of the graduates from the PTA program at Jefferson Community College have sought an advanced degree.
2. Create a PTA curriculum in excess of four (4) semesters traditionally associated with a Community College degree.
3. Create a PT curriculum unsound due to having to accommodate multiple academic and technical backgrounds. This is especially true when you consider the impact of PTA's trained out-of-state attempting to obtain credit for prior course work.
4. Create a PT or PTA curriculum that may not be in compliance with the standards for accreditation adopted by the APTA OR CAHEA.

The resolution adopted by the APTA 1979 House of Delegates requiring entry-level education be achieved through a post-baccalaureate degree clearly implicates the PTA's tenuous status in career mobility.

The allied health task force refused to accept the advisory group's stance and responded to their statement with the following:

The task force appreciates the time and efforts taken by the rehabilitation therapy discipline advisory group (DAG) to address these difficult problems and further we realize that these programs were not originally designed as steps in a laddered curriculum, however, irrespective of curriculum, programmatic, and philosophic considerations, the basic premise that assistant programs are terminal in nature is inconsistent with sound educational practice, the principles and philosophy of the KAHP project, and unacceptable to this task force. The philosophy of the KAHP is that articulation is possible and desirable. Although we realize that each of the professions have identified terminal behaviors for each of their levels, articulation between the two is desirable and feasible.

The allied health task force recommends acceptance of the final report by the rehabilitation therapy DAG, but rejects the premise upon which the report is based. Further, we recommend that if financially possible, two outside consultants, who are recognized as having expertise in higher education curriculum and instruction, analyze the antithetical stances of the task force and the rehabilitation therapy DAG to determine which position is more educationally sound, and report their findings to the task force and the DAG. Finally, assuming that our position is correct, the professional staff of the Council on Higher Education should cost out in realistic terms, the role delineation study necessary to implement the articulation project in rehabilitation therapy.

The DAG's final report was sent to two (2) outside consultants who had a broad background in curriculum planning and development. They agreed to evaluate the report and the task force's response using the following criteria:

1. What is the basic philosophy of education evident in the rehabilitation therapy final report?
2. Is the rehabilitation therapy final report based on valid academic curriculum development and planning for the purpose of articulation?
3. What are the specific strengths and limitations of the rehabilitation therapy final report?
4. Based on your analysis of the final report, what are the strengths and limitations of the task force's response to the report?
5. Finally, what recommendations do you have to address the limitations of the rehabilitation therapy final report and/or the response from the allied health task force?

Both consultants supported the position that quality educational programs could be planned with articulation integrated in the curricula. Tomlinson stated "some institutions have found it to be possible to plan and deliver quality curricula in this area (rehabilitation) which give recognition to both institutional prerogatives and professional standards and also facilitate articulation. There has to be the willingness and incentive to initiate and carry out such planning. The DAG recommendations are most often made within the constraints of the existing situation and tend to reflect a predetermined position rather than an objective analysis with the purpose of facilitating articulation."

In Gilpatrick's response, she states "the (DAG) report appears to be evasive in its expression about desirability of articulation, but its net effect is to oppose it..." She goes on to indicate "the limitations (of the DAG report) are that there is evident confusion about what articulation implies, where the burden lies in carrying it out, and a foot dragging adherence to current conditions. It makes the problems seem more difficult than they are and avoids pointing out clear inequities in current practice.... There are some real strengths (in the DAG Report), in that it makes manifest the attitudes that the state system must deal with if it is to succeed in enlisting support for articulation. It also provides needed information and several good suggestions."

No additional activities were planned by the DAG after January, 1981. The members elected to discontinue their meetings and did not wish to meet as a group to discuss the results of the consultants' evaluation. The DAG felt communication between the members was enhanced by KAHP and believed cooperative activities would increase.

Chances for articulation depended on improved data bases from which to assess comparable information between the physical therapist's assistant and the physical therapy programs. This was recognized as an important factor in determining whether or not articulation could actually be improved. The physical therapist's assistant program agreed to develop a more comprehensive list of competencies for courses in the curriculum.

Physical Therapy Articulation Committee

In the Fall of 1981, the University of Louisville (UL), Division of Allied Health submitted a proposal to the Council on Higher Education for initiation of a new baccalaureate program in physical therapy. The proposal was based on sound principles of academic planning and included statements regarding the university's willingness and commitment to articulate the program with the physical therapist assistant associate degree program at Jefferson Community College (JCC), also located in Louisville.

Prior to that time the Council had established specific criteria by which all proposals for new programs in public institutions would be reviewed. These review standards are quite extensive and address the many facets of statewide and program planning. However, for the purposes of this report two criteria are especially pertinent:

2.07 Plans for Articulation/Transfer Cooperation
- a. Describe how this program will articulate with related programs in the institution and in the state.
- b. Describe the extent to which student transfer has been explored and coordinated with other institutions.

3.02 Similar Program in Kentucky
- d. Have you examined the possibility of collaborative and/or sharing of resources with similar programs within the state? What were the results of your examination?

In addition to these program review guidelines, the allied health task force's technical review and comment of the proposed new program requested a very specific detailed plan for articulation. For while the UL proposal documented a sound plan for a baccalaureate program and addressed the articulation issue, it lacked sufficient evidence of a viable mechanism for effective transition of qualified physical therapist assistants pursuing career mobility. This was brought to the attention of the University of Louisville which consequently formed an articulation committee to develop an agreement between the two levels of programs. Once the agreement was developed the Council on Higher Education approved the implementation of the physical therapy program.

As a result of the discipline advisory group and the articulation committee, the following transfer of credit was negotiated:

Direct Credit Transfer

1. Eight (8) general education courses (26 credits) in english, psychology, biology, math and sociology taught in the PTA program at Jefferson Community College can be transferred to the University of Louisville and the University of Kentucky physical therapy programs,
2. Upon advisement, potential transfer students may also take specified courses in chemistry (9 credits) and physics (10 credits) while at JCC to meet prerequisites for admission to the University of Louisville and the University of Kentucky physical therapy programs.

Advanced Placement Credit

Only UL has signed an agreement with Jefferson Community College to award advanced placement credit in eleven of its proposed courses, totalling fourteen credit hours. This advanced placement credit is as follows:

AHC 320	Health Care Delivery in the U.S.	2
AHC 300 A	Medical Terminology	1
AHC 300 B	General Patient Care and Ethics	1
AHC 300 C	Emergency Medical Procedures Health	1
*AHC 311 A	Psychological and Social Aspects of Health and Illness	1
*AHC 311 B	Psychological Aspects of Illness and Disability	1
AHC 311 C	Interpersonal Relationships For Allied Health Practitioners	1
AHC 301	Massage	1
**PT 321	Physical Therapy Modalities	1
***PT 414	Medical Science	3
****PT 440	Therapeutic Exercise I	1
		14

*An experimental course will be developed at JCC and team taught by JCC and UL faculty (i.e., PTA 239). The course will include the objectives within AHC 311A and AHC 311 B; U of L will transfer 2 credit hours.

**UL will redevelop PT 321 with an emphasis on theory and applications. U/L will transfer the application portion of the course (i.e., 1 credit hour).

***Pre-identified potential transfer students at JCC may register for this course at U/L during their second year at JCC.

****This course will be developed into modules; the module(s) containing Range of Motion, Strengthening Exercises, Berger Allen Exercise, Relaxation Exercises, and Respiratory Exercises will be given advanced credit for PTA students. However, PTA students will be required to attend all labs. Mini-lectures will be presented before each lab.

The University of Louisville and Jefferson Community College transfer agreement also specifies the following areas of cooperation:

1. clinical education experiences will be cooperatively planned,
2. faculty from both programs will explore teaching selected components in each other's program,
3. annual faculty/staff development meetings will be jointly planned, and
4. an evaluation plan will be developed to determine the success of transfer students.

Additional Accomplishments in Physical Therapy

The following activities have also been completed to contribute to physical therapy education:

1. Physical Therapy Student Brochure. In order to disseminate the results of the articulation activities to students, a brochure was developed. It was designed to provide general information about physical therapy

education, to distribute information about the transfer agreements, and to assist faculty/counselors in student advisement.

2. Completion and Publication of a Physical Therapy Manpower Projection Model. With licensure data provided by the Kentucky Department for Human Resources and educational program data available at the Council on Higher Education and in conjunction with the Kentucky Association of Physical Therapy, three models were used to project manpower requirements for licensed physical therapists in Kentucky. The models used were: 1) manpower population ratios, 2) trend analysis based on time series, and 3) health needs. The data from this study were an important variable in the Council on Higher Education's decision to approve a second B.S. program in physical therapy in the state.

For the purpose of the Kentucky Allied Health Project respiratory therapy included both respiratory therapy programs and respiratory therapy technician programs.

The overall goal of the discipline advisory group (DAG) was to negotiate transfer agreements between respiratory therapy technician programs and respiratory therapist programs. Representatives from each of the respiratory therapy/technician programs existing in Kentucky participated on the DAG.

The following discussion provides 1) an overview of each discipline, including definitions and a description of educational requirements, 2) a description of the negotiated systemwide transfer agreement, 3) related accomplishments of the discipline advisory group and 4) a brief description of the impact of the advisory group's work.

Respiratory Therapy Technician

The respiratory therapy technician specializes in the technical details of general respiratory therapeutics. Technicians may assume clinical responsibility for specified respiratory care modalities involving the application of well-defined therapeutic techniques under the direct or indirect supervision of a therapist or physician. The technician's role does not require the exercising of independent clinical judgement; however, the technician is expected to adjust or modify therapeutic techniques within well-defined procedures based on a limited range of patient responses. Therefore, the effective use of the technician, especially in the critical care setting, requires the supervision of a respiratory therapist or a physician experienced in respiratory care.

Respiratory therapy technician programs are sponsored by the Bureau for Vocational Education. The programs are 45 weeks in length and provide instruction and practice necessary for the graduate to function as a respiratory therapy technician. Graduates from accredited programs are eligible for credentialing by the National Board for Respiratory Therapy (NBRT). The credential awarded to qualified technicians is the certified respiratory thera / technician (CRTT). Currently there are three technician programs in Kentucky.

Respiratory Therapist

The respiratory therapist specializes in the application of scientific knowledge and theory to practical, clinical problems of respiratory care. The

respiratory therapist is qualified to assume primary clinical responsibility for all respiratory care modalities, including responsibilities involved in supervision of respiratory therapy technician functions. The therapist may be required to exercise considerable independent clinical judgement in the respiratory care of patients under the direct or indirect supervision of a physician. Furthermore, the therapist is capable of serving as a technical resource person to the physician with regard to current practices in respiratory care, and to the hospital staff regarding effective and safe methods for administering respiratory therapy.

Respiratory therapist programs are 20-21 months in length, and provide educational experiences for the graduate to function as a respiratory therapist. Graduates from accredited programs are eligible to be awarded the credential of registered respiratory therapist (RRT) by the NBRT.

TRANSFER OF CREDIT

The primary charge for the respiratory therapy discipline advisory group was to develop a statewide plan for respiratory therapy education which would result in an articulated statewide system permitting entry and exist of prepared personnel at a variety of levels and improve interinstitutional efforts to share educational resources.

The advisory group viewed curriculum development as important to the development of articulation agreements. Because of the controversy surrounding the 1978 role delineation study completed by the American Association of Respiratory Therapy, the group decided to complete their own role delineation study using the Health Services Mobility Study Method of Task Analysis and Curriculum Design(6). This study is not yet completed. Consequently, the curriculum development that had been completed by each respiratory therapy program in Kentucky provided the framework for negotiating transfer agreements.

The respiratory therapy advisory group developed the theoretical articulation model illustrated in Figure 3.7. All respiratory therapy programs in the state are included in this model.

Working with selected discipline advisory group members, the University of Kentucky Community College System and the Vocational Education System negotiated a systemwide transfer agreement which includes five of the six respiratory therapy programs in the state. The agreement specified the following:

- Eligible graduates from respiratory therapy technician programs would be awarded 31 credit hours toward the 36 credit hours of respiratory therapy technician courses.
- General education course requirements would have to be completed prior to completing the 6 credit hours of respiratory therapy course work.

Additional Respiratory Therapy Accomplishments

In addition to the completion of a systemwide transfer agreement and the commitment to the completion of the role delineation study, the advisory group has completed the following:

1. A Statewide Respiratory Therapy Manpower Study. A respiratory therapy manpower study was completed in April, 1982. The results from this study will help provide information for more sound decisions regarding statewide planning for respiratory therapy education.

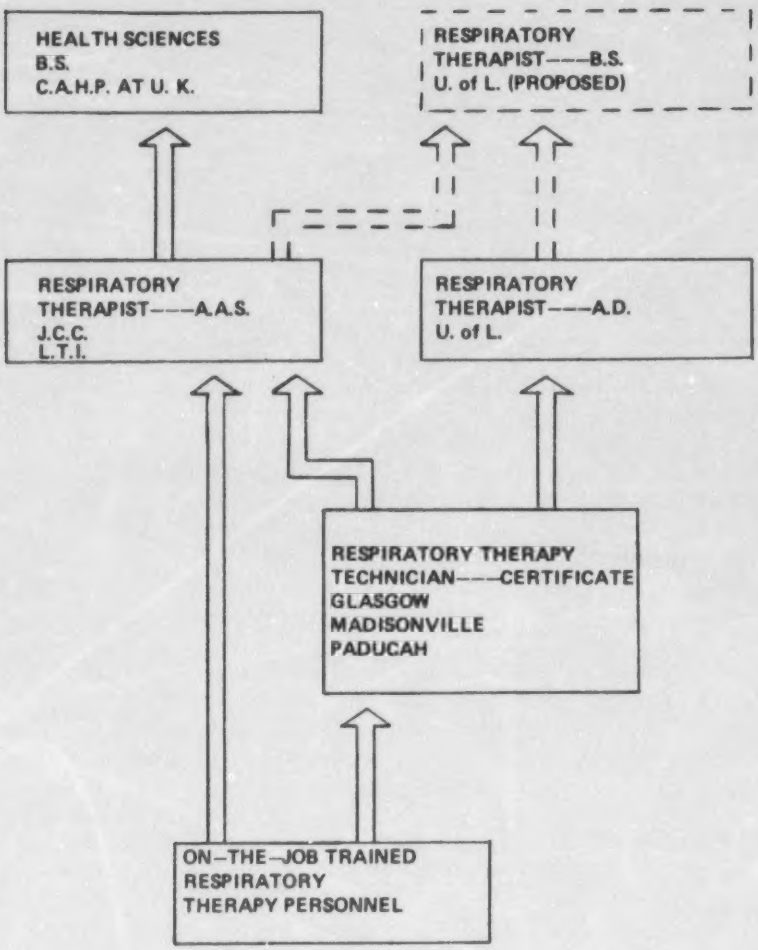


Figure 3.7. Respiratory Therapy Articulation Model.

Results of this study are available as a separate report titled "Respiratory Therapy Manpower in Kentucky, 1981: A Statewide Study".

2. A Respiratory Therapy Brochure. In order to disseminate the results of the DAC's activities to students, a brochure was developed. It was designed to provide general information about respiratory therapy education, to share information about the systemwide transfer agreement, and to assist faculty/counselors in student advisement.

Impact of the Respiratory Therapy Discipline Advisory Work.

In July, 1982 the Council on Higher Education approved a new associate degree program in respiratory therapy at Madisonville Community College. The curriculum for this program reflected the work of the discipline advisory group. Thirty-one semester hours of credit toward the associate degree in respiratory therapy will be granted to students who complete the one-year respiratory therapy technician program at a state vocational school.

In addition, the statewide respiratory therapy manpower study was cited in the program proposal. This study helped the Community College System document manpower need.

In Kentucky, as well as in other states, allied health manpower data have been virtually nonexistent except for those professions requiring licensure. Because of this lack of valid manpower data, educational institutions and health care providers have been dependent on the best available judgment within their geographic areas of service in their attempts to provide adequate numbers and types of allied health manpower. Consequently, it has been difficult if not impossible to document whether allied health programs are serving the public interest effectively and economically.

As early as 1974 in response to this manpower dilemma, the Kentucky Council on Higher Education received federal funding for a two-year Health Manpower Linkage Project. The purpose of this project was to develop linkages among agencies in the state responsible for health manpower planning, health manpower education and the allocation of resources for educating health manpower. During the contract period, manpower survey instruments were developed for the licensed health professions. In addition, limited data regarding allied health practitioners who are not licensed by the state, were made available through (the staff for) the State Health Information System's adaptation of an annual survey form routinely used to obtain planning data from licensed health care facilities. These initial efforts served to provide gross information regarding allied health practitioners and to create an awareness of the need to obtain more detailed information in order to make sound policy decisions.

In 1975, under the auspices of the Kentucky Council on Higher Education and with the aim of delineating issues in allied health education and making recommendations for alleviating the issues, an in-depth, two-year study was completed.(1) Issue No. 1 from the study stated that "The lack of current, comparable information regarding allied health manpower and educational programs compromises planning to meet Kentucky's health care needs."

The study recommended that in order to develop a statewide plan for allied health education and to continuously evaluate the quality and scope of programs, two data systems should be implemented. The two systems would gather and disseminate two types of data: a) manpower data and b) educational program data.

A health manpower collaboration effort emerged which resulted in the Council on Higher Education working closely with the State Health Information System. The State Health Information System collects health related manpower data (i.e., numbers and types of manpower currently employed, numbers and types of vacancies, attrition rates, and geographic patterns of employment.)

Professional staff from both agencies designed and pilot tested the necessary survey instruments.

The Council on Higher Education collects information concerning allied health educational programs (i.e., enrollments, graduations and origins of students). In addition to these base data, statewide graduate follow-up of students is being planned to determine employment of graduates.

The Kentucky Hospital Association has also been a vital member of this collaborative effort. Its support has helped insure high manpower survey response rates. Statewide interagency collaboration among the Kentucky Council on Higher Education, the Kentucky Hospital Association and the Kentucky Department for Human Resources has resulted in the following progress.

COMPLETION AND PUBLICATION OF A PHYSICAL THERAPY MANPOWER PROJECTION MODEL*

With licensure data provided by the Kentucky Department for Human Resources and educational program data available at the Council on Higher Education and in conjunction with the Kentucky Association of Physical Therapy, three models were used to project manpower requirements for licensed physical therapists in Kentucky. The models used were: 1) manpower population ratios, 2) trend analysis based on time series, and 3) health needs.

Highlights from this study are summarized as follows:

Manpower: Population Ratio Method

The manpower:population ratio method was used to estimate the number of health care personnel per unit of population. To determine this ratio, health care planners have relied upon minimal and optimal relationships determined by the judgement of experts or historical data.(2) The method assumes that changes in the size of the population will require a proportional change in health personnel. This method has strengths and weaknesses. The strengths are 1) simplicity, 2) nominal data requirements, 3) short time requirement and low cost, 4) usefulness of data for more complex models, and 5) usefulness in comparison to estimate derived from other models. Its weaknesses are 1) lack of knowledge of future changes, 2) possibility for an invalid fixed ratio, 3) relies on possibly inaccurate judgment by experts, and 4) potential for errors in historical data because of collection discrepancies.

Estimated Physical Therapy Requirements

Results: In 1978, about 30,000 licensed physical therapists were practicing in the United States.(3),(4) The national population in 1978 was approximately 218,548,000.(5) The ratio of manpower to population was 1.37:10,000. Table 4.0 illustrates the projected demand for physical therapists in Kentucky from 1980 to 1990 based on this national ratio. Projected population figures for Kentucky were interpolated from University of Louisville Urban Studies Center projections.(6)

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*A complete copy of the study findings can be obtained from the Council on Higher Education, Frankfort, Kentucky.

TABLE 4.0

Comparison of Requirements and Resources Projections
for Kentucky Physical Therapists

	Requirements*						
Year	National Ratio	Kentucky Ratio	Weighted National Ratio	Weighted Kentucky Ratio	Trend Analysis	APTA° Health Needs	Resources
1979	479	262	409	269	280	560	280
1980	483	265	413	272	291	582	305
1981	488	267	417	275	303	606	327
1982	493	270	421	277	316	632	348
1983	498	273	425	280	329	658	369
1984	503	275	430	283	342	684	388
1985	508	278	434	285	355	710	408
1986	513	281	438	289	368	736	427
1987	519	284	443	291	381	762	445
1988	524	287	447	294	394	788	463
1989	529	290	452	297	407	814	480
1990	534	293	456	300	420	840	496

*Represents "demand"; does not include budgeted vacant positions.
oTwice the number projected with trend (based on actual historical data.)

During the Kentucky Physical Therapy Association's annual license renewal period between December 1977 and January 1978 (Kentucky Revised Statute 327.051[3]), 261 physical therapists applied for licenses and stated they were active practitioners. The ratio of manpower to Kentucky population was 0.75:10,000. Table 4.0 illustrates the projected demand for physical therapists in Kentucky from 1980 to 1990 based on the fixed state ratio.

Weighted national and state ratios were obtained by determining the ratios of physical therapists per 10,000 population for each year of historical data; weighting the ratios by giving the greatest weight to the most recent ratio; and calculating an average ratio by dividing the sum of the weighted ratios by the sum of the weights. The weighted ratio of physical therapists per 10,000 for 1970, 1975, and 1978, was 1.17; the weighted state ratio was 0.77. Table 4.0 illustrates the projected demand for physical therapists in Kentucky from 1980 to 1990 based on weighted national and state ratios of physical therapists per 10,000 population.

Note that regardless of whether a Kentucky fixed ratio or a Kentucky weighted ratio is used, Kentucky has fewer physical therapist per 10,000 population than the nation.

Trend Analysis Method

In 1976, the Research and Statistics Branch of the Kentucky Department for Human Resources' Bureau for Manpower Services surveyed health industries and estimated that 240 physical therapists were employed in Kentucky in that year(7); the Office of Health Data of the Kentucky Department for Human Resources, determined that there were 261 licensed, active physical therapists in

1978 and 280 in 1979. The data were combined to establish a demand trend for physical therapy manpower in Kentucky.

Table 4.0 also illustrates the results of the trend analysis method. Note that the trend analysis method projects a greater demand (i.e., 420 in 1990) than either the Kentucky fixed ratio (i.e., 293 in 1990) or the Kentucky weighted ratio (i.e., 300 in 1990). However, it still remains considerably less than the National fixed ratio (i.e., 534 in 1990) and the National weighted ratio (i.e., 456 in 1990).

APTA Health-Need Method

Table 4.0 shows the national- and Kentucky-based data requirements for the APTA, Health Needs model. National statistics for physical therapists were supplied by the APTA.* Note from Table 4.0 that the APTA health needs model projects a need for 840 physical therapists by 1990 for Kentucky.

Resources

Health manpower resources are affected by several change factors whose effects are often difficult to measure from available/projected resources. Some of these factors are 1) professional program admissions, 2) professional program graduations, 3) migration patterns of in-state graduates, 4) migration patterns of out-of-state graduates, 5) number of currently active practitioners, 6) number of currently inactive practitioners, 7) licensure processes, and 8) separation. A manpower model incorporating these change factors can reflect reality fairly accurately; however, the level of detailed data required often constitutes a major obstacle for planning at the state level.(8)

A "reduced flow" resources model is based on a net attrition rate equation that measures the cumulative effect of change factors on manpower resources. This model was used by the National Center for Higher Education Management Systems, Boulder, Colorado, to project nursing resources.(8) The equation states that the available projected work force in a given year may be estimated by taking the current work force, adding to that the number of students graduated in-state during the current year, and either adding or subtracting a net attrition that is calculated by multiplying the current work force by a net attrition rate.(8) The model's major strength is simplicity; its one major weakness is that the net attrition rate assumes that changes among factors influencing the number of available practitioners will remain constant.

Table 4.0 illustrates the results of the resources projections for Kentucky physical therapists. Note that Table 4.0 projects that there will be 496 physical therapists in Kentucky in 1990 if factors influencing the number of available practitioners remain constant.

One of the major findings of this study was that the Kentucky fixed and weighted ratio of manpower to population was so much lower than the national fixed and weighted ratios.

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*A detailed description and discussion of the APTA Health Needs model is included in the study results and can be obtained from the Council on Higher Education, Frankfort, Kentucky.

RESPIRATORY THERAPY MANPOWER STUDY*

With support from the Department for Human Resources (DHR) and essential endorsement for the study from the Kentucky Hospital Association (KHA), a shared effort was developed to collect respiratory therapy manpower data.

The Council on Higher Education (CHE) desired to complete three possible manpower projection models and a resource projection model, but the following problems prevented this:

1. Problems calculating a national population ratio for respiratory therapist in 1981. There appears to be no accurate national respiratory therapy manpower data. The American Association for Respiratory Therapy (ARRT) estimated the number of respiratory therapy personnel in hospitals as of July 1, 1977. However, they expressed concern that the data were not reliable. Currently, the ARRT is completing another national survey of respiratory therapy personnel. The completion of this study will make it possible to calculate a national population ratio.
2. Problems calculating weighted state ratios for respiratory therapy. The State Center for Health Statistics, Department for Human Resources produces an annual hospital and services report. This report is a summary of a survey of all licensed hospitals in the state. Part of the survey requests the numbers of full-time and part-time employed respiratory therapy personnel. The 1979, DHR survey data indicate that 567 (full-time and part-time) respiratory therapy personnel were working in Kentucky. The 1980 data indicate that 624 (full-time and part-time) respiratory therapy personnel were working in Kentucky. However, the 1981 KHA/CHE survey results indicate that there are approximately 981 respiratory therapy personnel in Kentucky. Because of this tremendous difference in reported personnel from 1979 to 1980 (i.e., an increase of 357) the data base does not appear to be accurate enough to calculate a weighted ratio for respiratory therapy. Similarly, this does not provide consistent historical data for calculating valid and reliable trend analysis.
3. Problems calculating resources projections. Data necessary for making resources projections are:
   a. The "net attrition adjustment"--a rate which measures the effect of various factors on the in- and out-migration of respiratory therapy personnel in the work force.
   b. Respiratory therapy resources from past years--the actual number of respiratory therapy personnel in the work force.
   c. Respiratory therapy program graduates from the past and projections for the future.

Again, since we did not have accurate historical data regarding the actual number of respiratory therapy personnel in the work force, it was not possible to calculate accurate resource projections.

Because of these limitations, the respiratory therapy manpower study primarily is a descriptive summary of the status of respiratory therapy personnel in Kentucky in 1981. However, the survey does provide the

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*A complete copy of the study results can be obtained from the Council on Higher Education, Frankfort, Kentucky.

basis for future manpower study analysis. A summary of the survey results are as follows:

A survey questionnaire was sent to the total population of hospital administrators and respiratory therapy personnel in Kentucky. Ninety-five percent (i.e., 112/118) of the institutions surveyed returned questionnaires.

A demographic profile of all respiratory therapy clinicians working in Kentuckv revealed the following:

- Approximately 46 percent hold a high school diploma or less, 21 percent hold a certificate, 23 percent hold an associate degree, and 9 percent hold a bachelor's degree.
- Approximately 42 percent are on-the-job trained, 15 percent are certification eligible, 15 percent are certified by the National Board for Respiratory Therapy (NBRT), 17 percent are registry eligible and only 10 percent are registered by the NBRT.
- Approximately 86 percent are currently working full-time.
- Approximately 45 percent have been employed in the field for three years or less.
- Approximately 71 percent have been employed in their current position 3 years or less.
- Approximately 36 percent have graduated from a respiratory therapy/technician program in Kentucky, 11 percent were educated out-of-Kentucky and 52 percent had not graduated from a respiratory therapy program.

Consequently, a work force profile emerges that suggests many practicing respiratory therapy personnel have relatively few years of work experience, limited educational experience, and limited credentials collectively.

A regional profile emerges that suggests eastern Kentucky has a high percentage of respiratory therapy personnel with a high school diploma or less, a high percentage of personnel in the current position for 3 years or less, and a high percentage of on-the-job trained personnel.

A relatively small number of budgeted vacant positions (BVP) were reported. There were 67 full-time BVP and 27 part-time BVP for technicians. There were 27 full-time BVP and 6 part-time BVP for therapists.

The three most stunning survey results are closely related: 46 percent of the respiratory therapy personnel have a high school diploma or less, 42 percent are on-the-job trained, and 75 percent are uncredentialed. Additionally, it was found that the entire south-central and western region of the state is without a therapist program.

To help address some of the issues, the following recommendations emerged from the study:

1. Establish Respiratory Therapy Education Programs in Underserved Areas
2. Upgrade Existing Practitioner Status
3. Continue to Provide Methods for On-The-Job Trained Individuals To Become Credentialed
4. Assess the Quality of Care Issue Among Different Levels of Practitioners
5. Develop a Statewide Plan for Respiratory Therapy Education

Data from this study were an important variable in the Council on Higher Education's decision to approve a new associate degree respiratory therapy program.

CLINICAL LABORATORY SCIENCES MANPOWER STUDY IN PROGRESS

With the support of the Kentucky Hospital Association and the Department for Human Resources, the collection of clinical laboratory sciences manpower data has been made possible. Manpower data being collected include: 1) the number of full-time equivalent employees and budgeted vacancies by type of certification, 2) related variables such as level of education, years of experience, and educational programs attended, and 3) laboratory specific data including the number and variety of testing procedures performed and the amount of automation. This information will be used with demographic and economic data to develop an econometric model for forecasting clinical laboratory manpower demand.

A preliminary analysis of the demographic variables in the study has resulted in the following findings:

- From the 120 hospitals survey, 98 (82%) responded; from the 63 private laboratories surveyed, 23 (37%) responded.
- The total number of persons employed in the responding laboratories was 1504. From these, 82 percent are employed full-time and 18 percent are employed part-time.
- Forty-four percent of those employed in the laboratory had 1-5 years experience, 26 percent had 6-8 years experience, 12 percent had 11-15 years experience, and 9 percent had over 20 years of experience. Sixty-four percent of those responding to the survey had been with their current employer 1-5 years.
- The largest percentage of respondents (49%) held the bachelor's degree and 73 percent were certified. Of those certified, 47 percent were MT(ASCP) followed by MLT-AD(ASCP) (8%) and MT(AMT) (5%).

The study is expected to be completed by December 31, 1982. Findings will contribute to statewide clinical laboratory sciences program planning.

DENTAL AUXILIARIES MANPOWER STUDY IN PROGRESS

To develop a dental hygiene manpower projection model, dental hygiene manpower data collected by the Department for Human Resources in conjunction with the Kentucky Board of Dentistry are being used. The data are available for the years 1979, 1980, and 1981.

Because of the difficulty in obtaining data on dental assistants, dental laboratory technicians and expanded duty dental auxiliaries, graduate follow-up surveys are planned in lieu of direct manpower surveys. The graduate follow-up surveys will provide employment rates, and the auxiliaries' level of satisfaction with their work roles.

RADIOLOGIC SCIENCES MANPOWER STUDY IN PROGRESS

With the support of the Department for Human Resources and the Kentucky Hospital Association, all facilities including KHA hospitals and individuals licensed to work with ionizing radiation have been surveyed. The purpose of the manpower study is to collect data that will 1) provide a more accurate profile of Kentucky's radiological sciences personnel (i.e., radiologic technologists (radiographers), nuclear medicine technologists, radiation therapy technologists, ultrasonographers, computerized tomography technologists, medical physicists, and radiation health safety officers); and 2) profile the existing need for the various personnel and identify areas of shortage and/or maldistribution as an indicator of a need for graduates of the various programs.

Several factors should be noted that seem to have contributed to the progress being made in Kentucky. First, Kentucky has a long history of activism in the allied health area, and as a result, a foundation for these collaborative relationships had been built. In addition, the Council on Higher Education, the Kentucky Hospital Association, and the Department for Human Resources are viewed as appropriate organizations to be working together to provide allied health personnel. Finally, substantial use of "volunteers," and support from state allied health societies have contributed to our success.

Furthermore, these collaborative efforts permit each agency to fulfill its stated goals and objectives, decreases duplicative staff effort, and provides for a built-in mechanism for dissemination of study results.

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The Kentucky Allied Health Project has achieved the following outcomes:

1. Increased options for career mobility for Kentucky allied health students. To date, approximately thirty (30) transfer agreements have been negotiated (See Appendix A.) The agreements include program-to-program agreements, systemwide agreements and internal institutional agreements. The signing of these agreements has increased career options for students. In addition, both programs/systems have been enriched, and their potential applicant pool has been increased.
2. Increased cooperation among institutions. The allied health task force and five discipline advisory groups (over 100 individuals) have been meeting regularly for approximately three years. These meetings have resulted in increased cooperation and communication.
3. Improved utilization of existing resources. The transfer agreements and the completion of selected allied health manpower studies have contributed to better utilization of existing resources. For example, the systemwide agreement in respiratory therapy together with the respiratory therapy manpower study provided the foundation for the development of a cost-effective articulated respiratory therapy program at Madisonville Community College.
4. Established a clearer definition of entry-level competencies by type and level of program for selected allied health programs. The nutrition/dietetics and the respiratory therapy advisory groups have adapted the Health Services Mobility Study to delineate competencies and develop model curricula. The dental auxiliary advisory group has designed a core curriculum. The radiological sciences and clinical laboratory sciences advisory groups have developed curriculum guides.
5. Contributed to decreasing the proliferation of allied health programs. In the southern region, the number of allied health programs has increased 174 percent since 1967-68. This growth has netted a seven-fold increase in the number of graduates produced (Galambos, 1979). The emerging statewide system of allied health education in Kentucky has contributed to a plan which will establish new allied health programs based upon predetermined criteria.
6. Provide a demonstration model for other states. The outcomes of the Kentucky Allied Health Project are providing guidelines for other interested states. Currently, the Southern Illinois Articulation Project is using the KAHP model for regional planning.

Only in recent years has the issue of career mobility commanded attention and concern for allied health students and educators. The rapidly evolving nature of the allied health professions, with the shift of many educational programs from hospital to educational settings, concurrently with an increasing body of knowledge and the development of more sophisticated medical technology have conspired to make the transfer of credit especially important to allied health educators and students. Kentucky has a long history of activism in allied health, several prominent educators had accomplished a substantial amount of groundwork prior to the award of the coordinating grant. This previous groundwork along with the continuing commitment of educators, administrators and clinicians has been a major force toward the development of a statewide system of allied health education.

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APPENDIX A

Summary of Transfer Agreements

I. Program to Program Agreements

From	To
Physical Therapist Assistant (AD) Jefferson Community College	Physical Therapy (BS) University of Louisville
*Radiologic Technology (C) Kings Daughters' Hospital	Radiologic Technology (AD) University of Kentucky Community College System
*Radiologic Technology (C) St. Joseph's Hospital	Radiologic Technology (AD) University of Kentucky Community College System
*Radiologic Technology (C) Good Samaritan Hospital	Radiologic Technology (AD) University of Kentucky Community College System
*Radiologic Technology (C) Good Samaritan Hospital	Radiologic Technology (AD) Morehead State University
*Radiation Therapy (C) University of Kentucky (Simultaneous Registration)	Health Sciences (BS) University of Kentucky
*Radiologic Technology (AD) Statewide	Nuclear Medicine (BHS) University of Louisville
Radiologic Technology (C) Good Samaritan Hospital	Radiologic Technology (AD) University of Louisville
*Radiologic Technology (C) (AD) Saints Mary and Elizabeth Hospital	Radiologic Technology University of Louisville
Radiologic Technology (C) Madisonville Vocational Technical School	Radiologic Technology (AD) University of Kentucky Community College System
Medical Laboratory Technician (AD) University of Kentucky Community College System	Medical Technology (BS) Eastern Kentucky University and St. Joseph Hospital
Medical Laboratory Technician (AD) Murray State University	Medical Technology (BS) Eastern Kentucky University and St. Joseph Hospital

From	To
Medical Laboratory Technician (AD) Watterson College	Medical Technology (BS) Eastern Kentucky University and St. Joseph Hospital
Medical Laboratory Technician (AD) University of Kentucky Community College System	Medical Technology (BS) Morehead State University and St. Joseph Hospital
Medical Laboratory Technician (AD) University of Kentucky **Community College System	Medical Technology (BS) University of Kentucky
Medical Laboratory Technician (AD) Eastern Kentucky University	Medical Technology (BS) University of Kentucky
Medical Laboratory Technician (AD) Midway College	Medical Technology (BS) University of Kentucky
Medical Laboratory Technician (AD) Murray State University	Medical Technology (BS) University of Kentucky
Medical Laboratory Technician (C) Madisonville Area Vocational Technical School	Associate in Science (AD) Madisonville Community College
Medical Laboratory Technician (AD) University of Kentucky Community College System	Medical Technology (BS) University of Louisville
Medical Laboratory Technician (C) Madisonville Vocational Technical School	Medical Technology (BS) University of Louisville
Medical Laboratory Technician (AD) Murray State University	Medical Technology (BS) University of Louisville
Medical Laboratory Technician (AD) Watterson College	Medical Technology (BS) University of Louisville
Medical Laboratory Technician (AD) University of Kentucky Community College System	Medical Technology (BS) Western Kentucky University and St. Joseph Hospital

*Final signatures pending.
**Memorandum of Agreement

II. System to System Agreements

From	To
Dental Assisting (C) Vocational-Technical System	Dental Hygiene (AD) University of Kentucky Community College System
Respiratory Technician (C) Vocational-Technical System	Respiratory Therapy (AD) University of Kentucky Community College System

III. Internal Articulation

From	To
Medical Laboratory Technician (AD) Eastern Kentucky University	Medical Technology (BS) Eastern Kentucky University
Medical Laboratory Technician (AD) Murray State University	Medical Technology (BS) Murray State University
Dietetic Technician (AD) Eastern Kentucky University	Dietetics (BS) Eastern Kentucky University
Dietetic Technician (AD) Murray State University	Dietetics (BS) Murray State University

APPENDIX B

Discipline Advisory Group Members

and

The University of Louisville and Jefferson Community College

Physical Therapy Articulation Committee Members

CLINICAL LABORATORY SCIENCES
DISCIPLINE ADVISORY GROUP

Sr. Mary Laurence Budde, SND (Ph.D.)
Thomas More College

Ms. Cathy Christopher
Murray State University

Ms. Jane Edwards
Henderson Community College

Mr. Robert Eich
The Medical Center/Bowling Green

Dr. Larry Elliott
Western Kentucky University

Ms. Donna Harrison
Madisonville Area Vocational-Technical School

Ms. Sonya Hopkins
Watterson College

Ms. Helen Layman
University of Louisville

Ms. Martha Mann
St. Joseph Hospital

Dr. Patsy Matsunaga
Kentucky State University

Ms. Nancy Meloan
Murray State University

Ms. Frances J. Morris
Council on Higher Education

Ms. Patricia Motley
International Clinical Laboratories

Mr. Ted Pass II
Morehead State University

Dr. Earl Rapps
Northern Kentucky University

Dr. Gertrude Ridgel
Kentucky State University

Mr. Michael Rush
Western Kentucky University

Mr. Richard Schmitt
Eastern Kentucky University

Dr. Marie Vittetoe
University of Kentucky

CONSULTANTS

Mr. Dan Southern
Western Carolina University

Dr. Robert Tomlinson
University of Illinois

OTHERS WHO HAVE WORKED EXTENSIVELY WITH THE CLS DAG

Astrid Force and faculty
St. Joseph Hospital

Ethel Jo Ellington and faculty
St. Anthony Hospital

Mariane Otte and faculty
St. Elizabeth Medical Center

DENTAL AUXILIARY
DISCIPLINE ADVISORY GROUP MEMBERSHIP

Sandra Appling
Bowling Green State Vocational-Technical School

Jean Cain
Jefferson State Vocational-Technical School

Larry Chiswell
Lexington Technical Institute

John Fuhrmann
Lexington Technical Institute

Harold Holbrook
Morehead, Kentucky

Richard Kingston
University of Kentucky

Ruby F. Meador
Western Kentucky University

Darlene E. Novak
University of Louisville

Colleen O'Toole
Somerset Community College

Martha Rankin
Watterson College

Barbara J. Schnurr
University of Louisville

Eric Spohn
University of Kentucky

Vivian Whitehouse
Jefferson State Vocational-Technical School

CONSULTANT

Ms. Irene Woodall
Bala-Cynwyd, Pennsylvania

NUTRITION/DIETETICS
DISCIPLINE ADVISORY GROUP (DAG)
MEMBERS

*Eena Adams
Morehead State University

Brian Ann Arnett
University of Kentucky
Medical Center

*Willena Beagle
University of Kentucky

*Dan Benardot
Western Kentucky University

Janice Burdette Blythe
Eastern Kentucky University

Sally DuFord
Murray State University

Darlene Forester
Kentucky Dietetic Association

Shirley Gibbs
Western Kentucky University

*Janice Hensley
University of Kentucky

Joanne Lang
DAG Coordinator
Council on Higher Education

Chung Ja Lee
Kentucky State University

*Glen McNeil
Morehead State University

Donald Oberleas
University of Kentucky

Jean Olds
Berea College

Sandra Sayers
University of Kentucky

*Formerly represented the respective institutions.

RADIOLOGICAL SCIENCES
DISCIPLINE ADVISORY GROUP
MEMBERS

*Rebecca Abbott
Lexington Technical Institute

Henry Baughman
Western Kentucky University

Ellis Blanton
Louisville Baptist Hospital, Inc.

John Camp
Madisonville State Vocational-Technical School

Frances Campeau
University of Louisville

Ralph Christensen
University of Kentucky

Jackie Darling
Morehead State University

Fred Geiger
Council on Higher Education

Jo Ann Gorham
Good Samaritan Hospital
Lexington

Frank Howard
University of Louisville

*Michael Huffacker
Lexington Technical Institute

Lucy LaFontaine
Good Samaritan Hospital
Lexington

Joanne Lang
Council on Higher Education

Jeana Phelps
Jefferson State Vocational-Technical School

Janet Sanford
University of Kentucky Medical Center

Carlos Soto
Northern Kentucky University

Jay Whelan
St. Anthony Hospital
Louisville

*Former members

REHABILITATION THERAPY
DISCIPLINE ADVISORY GROUP MEMBERSHIP

Katy Allen, OTR
Eastern Kentucky University

Joy Anderson, OTR
Eastern Kentucky University

Dale Avers, LPT
Bourbon County Nursing Home

Kathy Bishop, OTR
Cardinal Hill Hospital

Laura Cullens, OTR
Institute of Physical Medicine and Rehabilitation Therapy

Mafalda White French, LPT
Jefferson Community College (former faculty)

Richard McDougall, LPT
University of Kentucky Medical Center

Robert Orendorf, LPT
Institute of Physical Medicine and Rehabilitation Therapy

M. Joanne Lang
Council on Higher Education

CONSULTANTS

Dr. Eleanor Gilpatrick
Hunter College
New York, New York

Dr. Robert M. Tomlinson
University of Illinois at Urbana-Champaign

RESPIRATORY THERAPY
DISCIPLINE ADVISORY GROUP MEMBERSHIP

Ms. Nancy Cangemi
West Kentucky State
Vocational-Technical School

*Ms. Carolyn O'Daniel
Jefferson Community College

Mr. Dennis Parsons
University of Kentucky

*Mr. David Pennaman
Madisonville State Vocational-
Technical School

Mr. Dixon Rapp
T. J. Samson Hospital

*Mr. Francis (Tri) Roberts III
Lexington Technical Institute

Mr. John W. Southall
Glasgow School of Health
Occupations

Mr. Toby Tomazic
University of Kentucky
Medical School

Mr. Jerry Walker
University of Louisville

Ms. Charlene Ziegler
Baptist Hospital East

*Mr. Fred Geiger
Council on Higher Education

Vocational Education and Community College Systemwide Articulation Committee Membership

Ms. Dorothy Ray
Bureau of Vocational Education

Ms. Marie L. Piekarski
Community College System
University of Kentucky

*Also members of the Vocational Education and Community College Articulation Committee

CONSULTANTS

Dr. Robert Hutson
Quinnipiac College

Mr. Craig Scanlan
Brookdale Community
College

THE UNIVERSITY OF LOUISVILLE AND JEFFERSON COMMUNITY COLLEGE
PHYSICAL THERAPY ARTICULATION COMMITTEE

Dr. Ronald Horvath
Jefferson Community College

Dr. Joy Kirchner
University of Louisville

Ms. Patricia Jo Metten, PT, MS
Jefferson Community College

Mr. Robert I. Orendorf, LPT, MS
University of Louisville

Ms. Marie L. Piekarski
Community College System
University of Kentucky